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TRAUMATIC ULCER OF THE DUODENUM AND STOMACH

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A case of duodenal ulcer following on, and probably caused by, abdominal trauma was recently called to our attention. This case, with all the details and roentgenographic observations, has been described by one of us.[1] In studying the etiologic traumatic factors which we believe led to the formation of the ulcer, we had occasion to look into the literature, not only of our own country but of foreign countries as well. Having established to our own satisfaction that in at least this one instance the relationship of the trauma to the duodenal ulcer was one of cause and effect, we were surprised to learn two supplemental facts: first, that American literature fails to take serious notice of the possibility of such an occurrence or glosses over the fact, many if not most American clinicians probably denying the existence of such a relationship; second, that foreign publications not only recognize the fact that traumatic ulcer of the duodenum or stomach does occur, but German and French literature is replete with very illustrative examples and references and not only recognizes its existence but describes in detail the modus operandi of the trauma, the clinical manifestations that accompany the formation of the lesion, and the clinical course of this unusual ulcer syndrome.

Approaching the subject at first with a healthy skepticism, we soon recognized the validity of the foreign writers who described this clinical picture. By the same token we had occasion to find fault with the undue diffidence and skepticism of our own students of gastro-enterology in refusing to accept the concept of traumatic gastric ulcer. What was even more noteworthy was the fact that most of our own confrères who should have been in a position to pass an opinion were usually entirely ignorant of the existence of the problem, if a problem existed, or had no personal knowledge of, or experience with, the underlying facts or premises of the thesis.

A brief review of the facts in the case which so impressed itself on us is as follows:

A woman, aged 45, who never had any previous digestive disturbances or complaints, was violently thrown out of a seat of a bus, late one afternoon, and catapulted across the aisle, so that the epigastric area of the abdomen forcibly struck a projecting edge of the opposite bench. She complained forcibly of the pain but was able to proceed to her home. The next morning she felt a less severe epigastric distress; on evacuation of the bowel she noted that the stools were "black" (melena). Two days later, she felt nauseated and vomited a large quantity of blood. She was removed to a hospital, where the hematemesis was repeated several times, associated with melena. The physical examination at this time, aside from the shock, revealed a large bruise to the right of the epigastrium. She left the hospital about a month after admission, the gastric hemorrhage being controlled by the usual conservative methods.

The course of the case has been characteristic of a typical Moynihan duodenal ulceration. There were periods of symptoms of severe pain, heartburn, vomiting and relief by food and alkalis, alternating with other periods of relative quiescence. Two further roentgenographic studies, one taken one month after the accident, and a third series taken thirteen months after the injury, all clearly corroborated the presence of a duodenal ulcer characterized by deformity of the duodenal bulb, pylorospasm, and a slight six-hour gastric residue. Two years after the injury, and in spite of repeated courses of medical treatment (bed rest, alkalis, the Sippy diet), one has no difficulty in recognizing all the features of a true duodenal ulceration, characterized clinically by postprandial pain, vomiting, heartburn and loss of weight. Epigastric tenderness on deep abdominal pressure persisted. The question of operative intervention, two years after the occurrence of the trauma and of the onset of symptoms, has been broached on account of the persistence and the severity of the symptoms.

Approaching the subject in a dispassionate and purely juridical mood, one must recognize that before, and up to, the moment of the accident there were registered absolutely no digestive disorders or other abdominal or general complaints. Directly following the injury, or within twenty-four hours, we noted the development of symptoms, of signs and, within two weeks, of the roentgen deformity of a duodenal ulcer. The evidence seems convincing that the trauma caused the ulcer. Before drawing such a final conclusion, one must consider and dismiss such contrary arguments as may be advanced.

Could a silent ulcer have existed prior to the accident? Is the patient a malingerer, or at least exaggerating and creating symptoms so as to establish a legal claim for compensation or for an award in a suit in negligence?

It is true that about 5 per cent of the adult population have, or have had, a gastroduodenal ulceration. It is probably equally true that in some of these individuals ulcer may be passive, dormant or latent. In this individual there was no previous history of ulcer of the digestive tract and nothing to point to its existence. Furthermore, this patient is normally sensitive and even hypersensitive to pain by the styloid pressure test of Libman,[2] and for this reason, and on the basis of our experience with pain sensitivity in ulcer, we do not consider it likely or probable that an ulcer could have existed without consciousness of its existence.

1. Gerendasy, Julius: Am. J. Surg., to be published.

2. Libman, E.: Tr. A. Am. Physicians **41**: 305, 1926; **44**: 52, 1929. Crohn, B. B.: Am. J. Surg. **7**:474 (Oct.) 1929. Libman Anniversary Volume, International Press **1**: 337, 1932.

We are, to be sure, lacking a radiographic study of the stomach before the accident, but such evidence would be possible only by a rare coincidence.

Against the argument of malingering or exaggeration on the part of the litigant, it must always be remembered that an ulcer deformity and niche was three times shown to exist in the duodenal cap. It is the actual existence of this ulcer deformity that interests us scientifically, not the degree of complaint that is at issue before us.

MEDICAL LITERATURE

From a perusal of the American literature and textbooks it soon becomes evident that the passing references and guarded opinions which refer to this subject are based on the experiences of other, usually foreign, writers. There are no publications in American medical journals that deal clearly with this subject or which exhibit first-hand information, experience or case histories.

The fact that foreign literature and many foreign writers accept the premises and the conclusion make it all the more important that the subject be thrown wide open for critical discussion by the resident members of our own profession, known in this country for their critical reserve and healthy skepticism toward new concepts and suggestions.

A comprehensive review of the foreign literature on this subject is contained in the 1930 edition of Richard Stern's textbook.[3] Traumatic surgeons recognize the fact that severe abdominal blows may lacerate a stomach. Such blows dealt directly, as a kick, or a heavy body falling on the abdomen, automobile injuries and falls from a height, constitute the principal means by which such traumas are administered. Under such conditions, such a severe blow will cause injuries of the gastric wall, varying from mucosal and submucosal lacerations with extravasation of blood (submucosal suffusions) or acute hemorrhages with separation of the mucosa for varying extents. Greater blows may cause actual ruptures of all or of several of the coats of the stomach wall. Such injuries usually occur on the lesser curvature of the stomach, at or near the pylorus, or may rupture the fundus completely by sudden elevation of the intragastric pressure to the bursting point.[4] The milder types of injury may regress with healing; death may ensue from hemorrhage or perforation; immediate surgical intervention may save the case, or, probably, an ulcer of the mucosa and the walls may follow as a sequel.

There are certain oft-quoted animal experiments that most writers are fain to refer to because of their reputed value in establishing such injuries. The two authors most quoted are Vanni[5] and Ritter.[6] Both writers used rather crude methods to establish their point. In all experiments a dog was anesthetized and tied, abdomen upward, on a table; a violent blow was dealt the abdomen with a heavy stick or hammer. There was no difficulty in producing lacerations and rupture of the stomach under these experimental conditions, particularly when the experiment was carried out directly after a full meal had been given. One can see little point in these experiments, for true ulcers have never been seen in the dogs, even when they were allowed to survive for varying periods. In most of the animals in which the injury was sublethal, evidences of healing were readily demonstrable; this fact agrees with the experience of most laboratory workers who have attempted to produce ulcers in animals by creating mucosal defects, by mucosal injection experiments, or by other means. All such defects heal readily if the conditions of the experiment remain uncomplicated.

CLINICAL OBSERVATIONS

In 1856, Potain[7] first described a case in which he attributed to a blow on the abdomen the formation of a gastric ulcer. This is the classic case which initiates the literature on the subject. A falling piece of furniture struck a woman, aged 60, on the abdomen. A continuous course of eight years of clinical symptoms of ulcer followed, death by inanition eventually resulting. At the autopsy a traumatic hour-glass stomach was demonstrated, with an ulcer 2 by 5 cm. placed "à cheval" on the lesser curvature and penetrating the body of the pancreas. The case was presented in the clinic of Cruveilhier, the latter himself presiding, with no less a pathologist than Axenfeld to demonstrate the morbid specimens. All those present agreed to the correctness of the facts and to the conclusion that the ulcer was traumatic in origin. The historical background and interest in this demonstration were notable.

The case of Potain marks the beginning of the interest in this subject. At varying intervals, successive cases were reported, so that by 1913 Petit[8] was able to recount no less than seventy-three plausible cases. Of course, the objection may well be raised that between 1856 and 1903 most of the citations were purely clinical observations, unsupported by autopsies or biopsies, occurring before the utilization of x-rays for verification, and before the recognition of the existence of duodenal ulcers (Moynihan, 1903). Such objections are scientifically logical and call, therefore, for a more critical scrutiny of all the clinical data and for a rearrangement and readjustment of the facts.

CASES RUNNING A SHORT COURSE WITH RECOVERY

Dumeny,[9] in 1903, was able to collect eighteen such likely cases, since which date many other examples have been added. The injuries are of varying natures but are generally catalogued as (1) blows by falling bodies, usually heavy articles of furniture, falling wagons or massive crates; (2) injuries caused by a punch, a kick, human or animal, among which kicks by horses are the most common; (3) falls from heights, landing on the abdomen and striking projecting surfaces; (4) being run over by a wagon or an automobile, or compression injuries resulting from railroad accidents. The injuries in all instances were severe, lighter blows or falls rarely being recorded as leading to this symptom complex. Within a few hours, or from one to six days following the injury, pain, vomiting and distress supervened. The vomiting of blood may occur almost immediately or, at times, from twelve to twenty-four hours, later, or may occasionally be postponed for from one to two weeks. After the initial shock (or collapse as the case may be), the full picture of a gastric injury becomes evident, quickly assuming the char-

3. Stern, Richard: Traumatische Enstehung innere Krankheiten, Jena, Gustav Fischer, 1930, p. 256.
4. Rose, E.: Deutsche Ztschr. f. Chir. **34**: 12, 1892. Rehn, L.: Arch. f. klin. Chir. **53**: 383, 1896. Poland, Alfred: Guy's Hosp. Rep., series 3, 1858, vol. 4. Robertson, H.: Injured Abdomen, Am. J. Surg. **14**: 395, 1931. von Hofmann: Lehrbuch gerichtlicher Medizin, Vienna, 1893, p. 480. von Winiwarter, F.: Wien. klin. Wchnschr. **15**: 1389, 1902.
5. Vanni, L.: Lo Sperimentale **43**: 113, 1889.
6. Ritter, A.: Ztschr. f. klin. Med. **12**: 592, 1887.
7. Potain, A.: Bull. Soc. anat. de Paris **31**: 385, 1856.
8. Petit, C. A.: Paris thesis, 1913-1914.
9. Dumeny, A.: L'ulcère traumatique de l'estomac, Paris, thesis, 1903.

acteristics of an ulcer, gastric or duodenal. The course is run in from a few weeks to six months, almost always resulting in a clinical cure. The cases that become chronic and exceed this time limit (six months) or develop complications are discussed later.

ACUTE TRAUMATIC PEPTIC ULCER, SHORT COURSE

The following typical examples of this type of case with spontaneous resolution are cited from the voluminous literature:

A man, aged 38, was kicked in the right hypochondrium by the hoof of a horse. Immediate vomiting and violent cramps set in. The next day there was repeated hematemesis with melena and severe postprandial pain. There was rapid loss of weight and marked epigastric tenderness on pressure, and diarrhea. Under treatment with bed rest and milk diet for three weeks, all symptoms regressed.[10]

A man, aged 57, was struck by the shaft of a wagon in the upper part of the abdomen. Immediate violent pain set in at the site of the injury. Eight days later vomiting began, which recurred daily in spite of strict dietary treatment; there was marked epigastric tenderness on pressure. Resolution occurred after six weeks.[11]

These two classic cases are quoted merely as examples of instances of traumatic ulcer which, after a short course, responded favorably to treatment and recovered. In the earlier reports from the literature, actual proof or visual demonstration of the existence of the ulcer is lacking. Roentgenographic or operative confirmation does not exist, and yet the sequential rise of the ulcer from the injury seems plausible. But there are occasional cases cited in later literature in which, without any history of a previous gastric disease, an ulcer was visually demonstrated as resulting from an injury. The following cases may be cited as illustrative examples:

A railroad employee was caught between two cars; pain and loss of appetite resulted. Six months later, severe attacks of abdominal pain became pronounced. A progressive downward course followed. At autopsy, a perforated gastric ulcer was observed on the lesser curvature, 1.2 cm. from the pylorus. In this case, the length of the time between the injury and the onset of severe symptoms somewhat weakens the argument favoring a traumatic origin of the ulcer.[12]

A man was kicked with great violence in the upper part of the abdomen by the hoof of a horse; five days later, fatal hemorrhage supervened. At the autopsy, three ulcers were seen, situated on the lesser curvature of the stomach, one of which enclosed a large perforation.[13]

As a striking instance of the rapidity with which characteristic duodenal ulcers may form, we may cite the following case:

A man, aged 39, was violently struck by a heavy falling body, and died sixty hours later of injuries to the thoracic organs. A fresh, bleeding, acute duodenal ulcer was exposed at autopsy, open vessels lying free in the necrotic walls and base of the lesion. This case is of unusual moment as demonstrating the rapidity of the formation of peptic ulcers, a fact that has been clinically conceded by experimental pathologists for the usual peptic ulcer and must now also be conceded for traumatic lesions.[14]

While such instances are striking in their evidence, it is obvious that, unsupported by further facts, the case for a traumatic origin of an indurated gastric or duodenal ulcer of the Cruveilhier type is still incomplete. One must therefore rely for further evidence on the type of case in which a typical chronic peptic ulcer followed abdominal injury. The literature is replete with such citations, probably not less than fifty or sixty examples being susceptible of notation. Most of the cases followed long periodic courses, the clinical symptoms being characteristic of a peptic, gastric or duodenal ulcer. Actual proof of the ulcer, however, is lacking. There are a few cases in which operation or autopsy bring full confirmation of the existence of the ulcer and make the traumatic etiologic factor so plausible as to be almost undeniable.

CASES ILLUSTRATING THE CHRONIC TYPE OF ULCER

The following are examples of the chronic type of traumatic ulcer:

A man, aged 40, a ranger, was traumatized by a fall against the butt of his own rifle. For several hours he had severe abdominal pain but no vomiting; later pains recurred regularly after meals. Relief followed after eight days, but two months later pain, and now, vomiting recurred with greater intensity. Severe heartburn, belching and pain followed within a few minutes of the completion of the meal, with vomiting from five to six hours later. Several weeks later, severe hematemesis resulted in syncope, followed by progressive emaciation induced by protracted pain and vomiting. The man was pale, anemic and emaciated and showed marked epigastric tenderness on pressure. Gastric lavage and dietary treatment were actively instituted, with progressive relief. The patient was observed on and off, for three years, when eventually the symptoms ceased.[15]

A man, aged 31, was involved in a railroad accident, being compressed simultaneously in the epigastrium and the back. Fifteen days later he began to complain of postdigestive distress with vomiting half an hour after each meal. Two months later, during the progress of the case, he was suddenly seized with severe hematesesis; he showed severe epigastric tenderness on examination. For six months there was a progressive downward course, in spite of very intelligent medical treatment. One year later the patient was still vomiting, often with blood. After a protracted course of two and one-half years, spontaneous healing occurred, with full recovery.[9]

Innumerable other cases of this type might be cited, Stern [3] giving several very plausible examples of traumatic ulcer. However, the actual visible proof being absent, this group of cases is left in the category of likely and probable, rather than proved, instances.

CASES OF CHRONIC TRAUMATIC ULCER PROVED BY OPERATION OR AUTOPSY

A third group, however, offers real proof of the existence of an ulcer following directly, or soon after, an accident to the abdomen, in which, previous to the trauma, no evidence or suspicion of a gastric lesion had existed. Of this group, the following represent some but not all of the outstanding examples:

A patient had been injured by a violent blow on the abdomen. Vertigo and shock resulted, with rapid successive hematemesis. After one month, some improvement in the general condition was noted, but the postdigestive complaints were maintained, though the hemorrhages had ceased. About three months after the accident a definite diagnosis of post-traumatic ulcer was made on account of the severe postprandial pain, vomiting and progressive emaciation. Two years after the accident the patient died of pulmonary tuberculosis; at the autopsy a cicatrized plaque was observed on the lesser curvature of the stomach, midway between the pylorus and the cardia; from this cicatrized area, scars radiated for 6 cm. in several directions.[16]

10. Derouet: Paris thesis, 1879.
11. Leube, William: Centralbl. f. klin. Med. **8**: 81, 1886.
12. Pauly: Aerztl. Sachverst. Ztg. **4**: 24, 1898.
13. Fertig: München. med. Wchnschr. **52**: 1781, 1905.
14. Gruber, G.: Deutsches Arch. f. klin. Med. **110**: 497, 1913.
15. Levig, William: Inaugural Dissertation, Kiel, 1898; quoted by Stern.[3]
16. Thoinot, L.: Précis de médecine legale, Paris **1**: 394.

Potain's case, which was referred to earlier in this article,[7] represents a bona fide instance of an ulcer demonstrated at autopsy to have followed on and existed for eight years after the accident. The position, size, and cicatrization of the ulcer on the lesser curvature demonstrates strong evidence, since the site corresponded to the location of the injury, and the symptoms followed directly on the trauma.

A woman, aged 67, sustained a violent fall on the abdomen, subsequent to which she complained consistently of postdigestive pain. Two years later she had a sudden, enormous and fatal hematemesis. At autopsy the stomach contained liquid blood and was the seat of a large ulcer on the posterior wall of the distal half of the stomach, the base of the ulcer being adherent to the pancreas. The ulcer was 3.5 by 4 cm. in diameter, elliptic, almost circular. The fatal bleeding resulted from the erosion of an exposed branch of the splenic artery.[17]

A man, aged 35, was struck in the abdomen by the hoof of a horse. A few days later, vomiting began. Symptoms continued with increasing severity for one year, at which time a gastro-enterostomy was performed for a pyloric ulcer. A cure resulted.[18]

Krönlein's[19] rather remarkable and striking case is probably the first in which a duodenal ulcer was described as following an injury:

A man, aged 24, an equestrian, was violently thrown over the saddle of his horse, the abdomen striking with violence the pommel. Twenty-four hours later the patient began to experience violent postdigestive pains. Four weeks later, vomiting was added to his symptoms. However, the symptoms were alleviated for a short period of weeks, only to recur with severity and with increased loss of weight.

Four months after the accident, the patient came under the observation of Krönlein. There was marked epigastric tenderness and evidence of gastric dilatation, with probable pyloric stenosis. As much as 3 liters was vomited at one period, at times with the presence of free acid, at other times when coffee-ground material was obviously present without free acidity. The patient was operated on eight months after the trauma. A stenosing, cicatrizing ulcer of the pylorus, adherent to the liver, was demonstrated at laparotomy. A resection of the pylorus was undertaken, but death resulted. At autopsy, a round ulcer of the duodenum was observed, causing a marked stenosis of the duodenal lumen.

A second case by this author[19] bears similar testimony to the existence of a post-traumatic cicatrizing ulcer:

A man, aged 48, was struck in the abdomen by the handle of a pitchfork. Severe pain began within twenty-four hours. Three months later, protracted vomiting occurred with loss of appetite and emaciation. At operation a dilatation of the stomach was seen with white areas of scar tissue in the pyloric region. On the suspicion of carcinoma, a resection was performed, the resected specimen, however, showing only the cicatrix of a healing pyloric ulcer.

A man, aged 40, three and one-half years after a powerful kick in the left hypochondrium, and after a prolonged period of gastric distress and vomiting, underwent an exploratory laparotomy. A gastro-enterostomy was performed for an ulcer adherent to the inferior surface of the liver; the anterior surface of the body of the stomach was adherent also to the anterior abdominal wall.[20]

The case of Abercrombie,[21] a report of which was published as early as 1824, deserves due consideration:

A woman was kicked in the abdomen by a horse. An inflammatory, tender area in the upper part of the abdomen was present for some time but suddenly disappeared during an attack of coughing. Severe diarrhea was followed, after a time, by death. At autopsy there was noted a perforated ulcer of the lesser curvature of the stomach adherent to the liver, the site of a fistula connecting the wall of the stomach with the ileum. The sudden change in the course of the symptoms was thus to be explained on the basis of a sudden rupture of a perforating ulcer with abscess into the lumen of the ileum.

Wendel[22] cites the case of a man who sustained a violent fall on the abdomen. After a protracted course of four years, cure resulted following a gastro-enterostomy for a stenosing pyloric ulcer.

While the pylorus seems most often to be the site of the ulcer, the lesser curvature ranks next in frequency. The following case is a little unusual:

A man, aged 35, sustained an abdominal injury, which was followed by symptoms of ulcer for one and a half years. There had been no previous gastric complaints. The usual vomiting and hematemesis finally ensued. At operation, an inflammatory mass occupied the lesser curvature, four fingerbreadths from the pylorus. This mass consisted of a fistulous tract leading from the base of an ulcer through inflammatory tissue with numerous small abscesses to the bed of the liver.[23]

The case of Pauly[12] is cited and discussed by Stern as an ulcer occurring as a result of a violent throw backward on the part of a man to prevent a fall. Six weeks later, a duodenal ulcer perforated with fatal issue. Though the patient had always been absolutely well before the fall, Stern, who is very critical, tends to accept the case as one of traumatic ulcer, though with some hesitation.

CASES SUSTAINED BY ROENTGENOGRAPHIC DEMONSTRATION OF ULCER

Stern[3] further accepts without reservations two cases in which the roentgenographic evidence of an ulcer forms the substantiating evidence. In one case, that of O. Gross, a lesser curvature niche was seen fifteen months after the injury. In the second case, a penetrating duodenal ulcer with niche formation was roentgenographically observed two years after the injury.

COMMENT

While this article is not intended in any way to include a comprehensive review of all the cases in the literature, sufficient striking and illustrative cases have been cited to demonstrate the outstanding characteristics of the etiology, pathology and clinical course of a traumatic ulcer.

ETIOLOGY

From the standpoint of etiology, it will readily be seen that cases in men far outnumber those in women, as can easily be assumed, day laborers and artisans employed in the more strenuous occupations being exposed more freely to accidents. The trauma is always of the severe type, falls, violent compression injuries and vehicular accidents, blows from falling bodies and from projecting objects predominating. There is an immediate period of shock, followed within a short time (from twenty-four hours to a few days, at most, weeks) by the onset of symptoms.

Occasionally the violence involves a portion of the body distant from the abdomen, the indirect force acting along the principles of contrecoup. In more instances the posterior wall of the stomach has been lacerated by falls on the spine, or by explosions. Such an unusual mechanism is illustrated in the case of Thiéry[24] in which a man fell 24 feet, landing on his buttocks, the injury resulting in an ulceration of the gastric mucosa. Occasional cases have been cited in

17. Carrière: Bull. Soc. anat. de Paris **38**: 121, 1863.
18. Lexer, quoted by Petit.[6]
19. Krönlein: Mitt. a. d. Grenzgeb. d. Med. u. Chir. **4**: 493, 1898-1899.
20. Hannecart: Ann. Soc. Belge de chir. **4**: 128, 243, 1904.
21. Abercrombie, J.: Edinburgh M. & S. J., 1824.
22. Wendel: München. med. Wchnschr. **55**: 877, 1908.
23. Jakch: Arch. f. klin. Chir. **64**: 938, 1902.
24. Thiéry, P.: Bull. Soc. anat. de Paris **44**: 352, 1889.

which the violence of abdominal wall contractions are so severe, as in attempting to save oneself from a fall, that the mucosa of the stomach is bruised by the strenuous muscle effort, or, as in a case cited, of the man lifting a heavy cask of wine.

PATHOLOGY

The pathologic changes that result from the injury are probably at first merely submucosal or mucosal hemorrhages, with lacerations of the walls of the stomach of various degrees of severity. After the short preliminary or incubation period, the symptoms point to the formation of a true peptic ulceration occupying the seat of the trauma and caused, presumably, by the peptic digestion of the lacerated and blood-suffused mucosal tissue. Such ulceration occurs with great rapidity, apparently within a few hours or, at most, a few days.

Traumatic ulcers are usually single; occasionally, as in the case cited by Fertig,[13] three gastric ulcers were seen all in the same line along the magenstrasse or lesser curvature groove, one of which had opened the coronary artery of the stomach. The form of the ulcer is variable; it may be circular, elliptic or oval. The dimension varies from 0.5 cm. to 5 or 6 cm. in diameter. The ulcer does not necessarily occupy the whole extent of the traumatic tear. In the case of Potain,[7] the cicatrix extended almost half across the organ, though the ulcer occupied only the lesser curvature of the tear.

Microscopically, the fully developed traumatic ulcer differs in no way from the usual peptic ulcer.

The site of the ulcer is frequently the pylorus, often the lesser curvature, and occasionally the surfaces of the anterior or posterior walls of the antrum or body of the stomach. In this respect traumatic ulcers follow the statistics for distribution of the usual peptic ulcer, not necessarily that these sites are more often exposed to the trauma but because these are the areas of the stomach where, according to the theory of Aschoff [25] minor traumas, such as occur from rough food or chemical injuries, result in ulcer formation.

A more obvious explanation is also plausible, for it is the antrum and the lesser curvature of the antral region that are exposed to injuries, since these areas of the stomach underlie the exposed epigastric angle of the abdominal wall. The pylorus, lying deeper and more to the right, is less exposed but more liable to be compressed against the vertebral column as a result of a crushing blow or fall. The great tendency of the pyloric ulcer to cause stenosis is easily understandable, as here there is not only the customary tendency of pyloric ulcer to cicatrize with stenosis but also the factor of the fibrous healing of the traumatized pyloric tissues incident to the original injury.

The duodenum as the site of traumatic ulcer seems far outnumbered by the stomach. This is easily explained on two grounds. The duodenum is better protected from direct injury by its deep placement and attachment to the right border of the vertebral column opposite the first and second lumbar vertebrae. In this site it is sheltered by the broad projecting bulk of the bodies of the vertebrae and can be reached only by a very direct and insinuating blow or object. In the second instance, the earlier literature fails to recognize duodenal ulceration, since before the publications of Moynihan in 1903 the existence of duodenal ulcers was practically overlooked. It is for this reason that statistical comparison of the relative frequency of gastric versus duodenal lesions must be inaccurate.

In addition to the ulcer itself, the pathologic descriptions deal with perforations of the ulcer bed and adherences to the pancreas, liver or abdominal walls; fistulous tracts incident to chronic perforating ulcers, and abscesses and forms of localized peritonitis as well as occasional gastrocolic and gastrojejunal fistulas are also cited as complications of traumatic ulcer.

Gastric acidity or the existence of free hydrochloric acid in the stomach contents seems a constant factor; in all the literature, wherever the analysis of gastric contents is mentioned, free acid and high degrees of total acidity are always quoted. There are no instances of anacid traumatic ulcers.

SYMPTOMATOLOGY AND COURSE

The onset of the digestive symptoms corresponds to the formation of the peptic ulceration. The symptoms are usually initiated by pain and vomiting, hematemesis occurring early in the course or with the first bouts of vomiting. Sometimes hematemesis is delayed, occurring only weeks or months later in the course. All the cases are characterized by emesis of blood or by melena, for hemorrhage seems to be a constant report in the literature, either because it is a constant phenomenon or because no author will report a case without this confirmatory and pathognomonic symptom. In general, the clinical course of the case resembles in all its features that of the customary peptic ulcer. Periodicity is an outstanding feature, though the usual seasonal variations and recurrences have not been noted. The cases seem to run a more severe course, however, frequently being accompanied by those more serious complications associated with ulcer, such as perforation, hemorrhage, pyloric stenosis, and hour-glass deformity.

The progressive downward course in the more serious and fatal cases is characterized by protracted vomiting, loss of weight and flesh, anemia, and severe emaciation. Many of the cases have come to operation, gastro-enterostomy being the procedure of choice, since most of the operative indications have been predicated on the pyloric stenosis, which is so common a complication.

Malignant degeneration of traumatic ulcer has not been observed.

PROGNOSIS

Little may be said on the subject of prognosis. It is obvious that only the more severe cases are reported in medical writings. The milder cases have been occasionally reported, but, resulting in spontaneous cure, are subjected to the criticism that the ulcer had not been demonstrated or proved beyond a reasonable doubt. With the free use of roentgenography, it seems likely that more cases of the less severe and nonfatal type will be increasingly reported.

Does mild trauma play any important rôle in the formation of the usual peptic ulcer? Various authors have reported trauma as an etiologic factor in groups of accumulated ulcer statistics.

Thus, Mattison [26] reports twenty-five cases of traumatic ulcer and states that in his opinion 1.5 per cent of all peptic ulcers have some relative traumatic insult before the onset of symptoms. Friedenwald,[27] in 200 collected cases of peptic ulcer, found a history of trauma to the abdomen in 2 per cent of the series.

25. Aschoff, L.: Lectures on Pathology, New York, Paul B. Hoeber, Inc., 1924.

26. Mattison, K.: Traumatic Gastric Ulcer, Hygiea **86**: 370 (June 15) 1924.

27. Friedenwald, Julius, in discussion on Jordan, Sara M., and Kiefer, E. D.: Am. J. Surg. **15**: 472 (March) 1932.

Hurst [28] states that from time to time there is a close connection between trauma and the development of a gastric ulcer, though he quotes no percentages. Einhorn [29] makes a similar observation.

The thought is thrown out merely as a suggestion that perhaps mild traumas have been overlooked in the anamnesis of ulcer cases; given an ulcer constitution and chemism, may not seemingly mild trauma be a more frequent deciding etiologic factor than has hitherto been admitted?

CRITICAL SUMMARY

Liniger and Molineus [30] have specified certain postulates that need to be satisfied before a case of suspected traumatic ulcer may be accepted as a true example of such a lesion.

1. Proof must be given of the absolute absence of gastrointestinal complaints or symptoms prior to the accident.
2. The trauma must be a severe one and localized to the abdominal wall, preferably to the epigastrium.
3. The immediate onset of symptoms must follow the injury.
4. The continuation of the developing symptoms and signs must assume the characteristics of a true gastric or duodenal ulcer.

Judged by these postulates, it seems impossible to escape the conclusion that traumatic ulcer of the stomach and duodenum does exist. While it is likely that some or even many of the cases quoted in the earlier foreign literature may be instances of lacerations or contusions of the gastric mucosa rather than of true ulcers, yet a large majority of the citations refer to cases that answer all the postulates and may be accepted in good faith as characteristic specimens of ulcers.

The subject of traumatic peptic ulcer has great medicolegal importance. Much depends, in compensation cases of this type, on the evidence of expert witnesses and authorities. It behooves those that occupy such a position in the medical community of this country to acquaint themselves with the literature and with the facts, the better to be able to judge of the statements and evidence of opposing witnesses and lawyers in the interests of justice. The complainant should not be deprived of fair compensation because of ignorance of the facts on the part of the medical expert who is called on to answer the usual "hypothetical" question; nor should a malingerer be allowed to set up a false claim that cannot be intelligently rebutted by the experience and wisdom of learned medical authorities.

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28. Hurst, A. F., and Stewart, M. J.: Gastric and Duodenal Ulcer, New York, Oxford University Press, 1929.
29. Einhorn, Max: M. J. & Rec. **135**: 219 (March 2) 1932.
30. Liniger and Molineus, quoted by Kessler, H. H.: Accidental Injuries, Philadelphia, Lea & Febiger, 1931.

The General Practitioner and Therapeutics. — Medical students ought to be taught therapeutics just as thoroughly as they are now taught diagnosis or pathology. . . . In connection with this one might have reason to hope that the general practitioner, who has ample opportunities for observing the therapeutic effects of drugs, might play a more important part in the advance of therapeutics than he has done for the last hundred years. Many observant general practitioners find out, as the result of their experiences, points about the effects of drugs or their side actions which may seem too insignificant to warrant publication. Though these points taken singly may seem of little importance, taken in the aggregate the experiences of the general practitioner, if they could be collected and assessed, would certainly assist greatly in the advance of practical therapeutics.—Gunn, J. A.: Remarks on the Outlook of Research in Therapeutics, *Brit. M. J.* **2**:391 (Aug. 27) 1932.

THE TREATMENT OF AMEBIASIS WITH IODOCHLORHYDROXYQUINOLINE (VIOFORM N. N. R.)

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Chiniofon N. N. R., which is sodium iodohydroxyquinolinesulphonate, has been widely exploited under various trademarked names ("yatren," "anayodin") as a relatively nontoxic and supposedly efficient amebacide. It is amazing that there was, until recently, so little *critical* experimental or clinical study of this compound, especially in comparison with other halogenated oxyquinolines, of which there are many. Why was iodohydroxyquinoline selected for clinical exploitation from those halogenated oxyquinolines available for study when no evidence was furnished that it has demonstrable advantages over the others?

EXPERIMENTAL DATA ON IODOCHLORHYDROXYQUINOLINE

As part of a comprehensive survey of the chemotherapy of amebiasis,[1] this compound was compared with hydroxyquinoline and certain of its halogenated derivatives from the standpoint of oral toxicity in guinea-pigs and cats, amebacidal action in vitro, and balantidicidal effect in naturally infested guinea-pigs. We noted an increase in toxicity with increasing halogenation of oxyquinoline and in proportion to the atomic weight of the halogen, and a comparable increase in balantidicidal efficiency. A similar relation could not be established, however, with respect to amebacidal action in vitro. Of some eleven halogenated hydroxyquinolines examined, we concluded that iodochlorhydroxyquinoline was the most promising of the group for further study with the possible exception of diiodo-

TABLE 1.—*Comparison of Biologic Activity of Iodochlorhydroxyquinoline (Vioform N. N. R.) with Sodium Iodohydroxyquinolinesulphonate (Chiniofon N. N. R.)*

Biologic Activity	Iodochlorhydroxyquinoline	Chiniofon
Toxicity: in guinea-pigs on single oral administration:	200 mg. per Kg. kills 13/20 guinea-pigs within 4 days	900 mg. per Kg. kills 7/15 guinea-pigs within 6 days
In vitro amebacidal concentration in 24 hours:	Soluble HCl compound 1:10,000	1:500
Balantidicidal activity in naturally infected guinea-pigs:	"Cured" 80% at divided total dosage of 150 mg. per Kg. with 20% mortality	"Cured" 60% at divided total dosage of 600 mg. per Kg. with 40% mortality
Amebacidal effect in naturally infected macaques:	"Cured" 7/8 at 150 mg. per Kg. for 10 days	"Cured" 2 at 500 mg. daily for 28 days; killed 2 at 2 Gm. daily for 10 days (J. F. Kessel)

This report is based on part of an extended cooperative study of the chemotherapy of amebiasis conducted by the Pacific Institute of Tropical Medicine within the Hooper Foundation for Medical Research and the Pharmacological Laboratory of the University of California Medical School, San Francisco, and supported in part by Eli Lilly & Co., Indianapolis, and the Ciba Company, Inc., New York. Dr. L. L. Stanley permitted work at the San Quentin Prison and cooperated in carrying it on.

1. Leake, C. D.: Chemotherapy of Amebiasis, J. A. M. A. **98**: 195 (Jan. 16) 1932.

hydroxyquinoline, which is still under investigation. This confirmed a preliminary survey, the data on which have been published.[2] In monkeys naturally infested with Endamoeba histolytica, iodochlorhydroxyquinoline was found to be more effective in nontoxic doses in completely and permanently clearing the stools than any mode of treatment yet reported on.[3] Its superiority to chiniofon N. N. R. is indicated by the summarized data offered in table 1. On the basis of this evidence, we felt justified in making a critical clinical study of the effectiveness of iodochlorhydroxyquinoline in human amebiasis, especially since so many competent observers have reported good results with chiniofon,[4] although our clinical experience with the latter has been disappointing.

Iodochlorhydroxyquinoline is described in New and Nonofficial Remedies under the name "vioform" as an iodine containing dusting powder proposed as a substitute for iodoform.[5] It is a grayish-yellow powder with a faint aromatic odor, almost insoluble in water, sparingly soluble in alcohol but soluble in hot glacial acetic acid. It contains about 40 per cent iodine in comparison with 26 per cent in chiniofon, in addition to about 12 per cent chlorine. Some absorption of this drug occurs from the gastro-enteric tract, and it is excreted in part in the urine.

DOSAGE

For our dosage in human amebiasis we decided to begin with about one-tenth the dosage we found effective without any evidence of toxicity in monkey amebiasis. This averaged 0.75 Gm. daily on the basis of 10 mg. per kilogram for a 75 Kg. person and was conveniently administered in capsules of 0.25 Gm. each, given three times a day. We believe that twice this amount could be tolerated by the average individual without danger. As we found that 0.75 Gm. daily for ten days, a total of 7.5 Gm., was not uniformly effective, we gave most of our patients a second such course of therapy after a rest period of a week to ten days following the first. This double course of iodochlorhydroxyquinoline therapy we found successful, as our data herewith reported indicate. We recommend that this dosage be used in chronic amebiasis cases without dysentery but that higher dosages be employed for severe cases.

UNTOWARD EFFECTS

With this course of treatment (0.75 Gm. daily for ten days followed by a week's rest, after which 0.75 Gm. daily was repeated for another ten days, for a total of 15 Gm. in four weeks), we found no signs of toxicity nor unpleasant symptoms in any patient. Usually the patient's stools hardened after three or four days' treatment, and some constipation was noted. The stools presented a characteristic oily green appearance. This may be used as an index of whether or not the patient takes the drug.

In rabbits killed by air injection after the oral administration of 100 mg. per kilogram for ten days, Dr. James Rinehart of the Pathological laboratory of the University of California Medical School could find no demonstrable gross or microscopic injury that could be attributed to the drug. However, in animals dying from a single dose of 250 mg. per kilogram by mouth,

TABLE 2.—*Response of Amebiasis Patients to Treatment with Iodochlorhydroxyquinoline*

Case	Weight, Kg.	Age	Total Dose, Gm.	Period of Therapy, Days	Follow-Up Period, Months	No. Negative Stools in Follow-Up Period	Symptom Response	Stool Response	Comment
1*	67	48	7.5	10	1	4	Good	Cleared	Recurrence 4 mos. after therapy
			15.0	30	8	21	Excellent	Cleared	Recurrence 11 mos. after therapy
2	17	5	2.0	10	10	9	Good	Cleared	
3	33	10	5.5	17	6	20	Excellent	Cleared	
4	40	31	15.0	37	5	21	Fair	Cleared	
5	54	43	15.0	28	5	18	Good	Cleared	
6	61	23	15.0	30	5	6	Good	Cleared	
7	61	59	15.0	30	6	14	Good	Cleared	
8†	17	4	2.0	10	3	6	Good	Cleared	Recurrence 3 mos. after therapy
			3.25	15	3	5	Good	Cleared	Recurrence again in 3 mos.
			3.75	10	4	6	Good	Cleared	
9†	27	10	3.25	15	6	12	Good	Cleared	
10†	55	35	7.5	10	1	3	Fair	Cleared	Recurrence 1 mo. after therapy
			7.5	10	3	7	Fair	Cleared	Recurrence 3 mos. after therapy
			15.0	30	4	9	Fair	Cleared	
11†	17	3	3.25	15	4	7	Fair	Cleared	Recurrence 4 mos. after therapy
12‡	58	20	15.0	37	2	8	Fair	Cleared	Recurrence 2 mos. after therapy
			20.0	37	1	4	Fair	Cleared	Went on voyage
13‡	57	26	15.0	37	2	9	Fair	Cleared	Recurrence 2 mos. after therapy
			15.0	37	3	11	Fair	Cleared	
14	69	38	7.5	10	1	3	Excellent	Cleared	Went on voyage
15	59	58	9.0	10	1	4	Excellent	Cleared	Went on voyage
16	54	20	20.0	36	1	4	Good	Cleared	Went on voyage
17	59	19	20.0	32	4	20	Fair	Cleared	
18	84	31	15.0	26	6	21	Good	Cleared	
19	61	32	15.0	26	6	21	None	Cleared	
20	82	41	15.0	26	6	24	None	Cleared	
21	72	32	15.0	26	6	24	Good	Cleared	
22	90	46	15.0	26	6	27	Good	Cleared	
23	70	25	15.0	37	5	21	None	Cleared	
24	80	20	15.0	37	6	24	Good	Cleared	
25	57	26	15.0	37	6	24	Good	Cleared	
26	64	31	7.5	10	..	..	Worse	None	Stools remained positive during therapy period
			10.0	10	5	21	Fair	Cleared	
27	64	22	15.0	25	6	29	Fair	Cleared	
28	60	23	15.0	25	6	25	Good	Cleared	
29	74	30	15.0	25	6	24	Good	Cleared	
30	70	27	15.0	25	5	20	Good	Cleared	
31	104	55	15.0	25	4	17	None	Cleared	
32	70	20	15.0	25	4	19	None	Cleared	
33	70	21	15.0	23	5	21	Good	Cleared	
34	72	39	15.0	27	5	15	None	Cleared	
35	64	19	15.0	25	4	18	None	Cleared	
36	71	24	15.0	27	4	21	Good	Cleared	
37	70	26	15.0	32	5	24	Good	Cleared	
38	76	29	15.0	32	4	20	None	Cleared	
39	65	49	15.0	32	4	18	None	Cleared	
40	72	21	15.0	32	4	19	None	Cleared	
41	72	36	15.0	32	4	22	Good	Cleared	
42	59	30	15.0	32	4	18	None	Cleared	
43	65	43	15.0	32	4	18	None	Cleared	
44	70	28	15.0	32	4	20	None	Cleared	
45	71	27	15.0	32	4	23	Good	Cleared	
46	80	26	15.0	26	3	18	Good	Cleared	
47	73	34	15.0	23	3	20	Excellent	Cleared	

* Uncooperative; subject to continued danger of reinfection from wife, who refused treatment.

† These patients were all members of the same family and were subject to constant danger of reinfection from friends and relatives refusing treatment.

‡ Subject to reinfection from unhygienic environment beyond our control.

2. Anderson, H. H.; David, N. A., and Koch, D. A.: Effects of the Halogenation of Oxyquinolines on Biological Activities, Proc. Soc. Exper. Biol. & Med. **28**: 484 (Feb.) 1931.

3. Anderson, H. H., and Koch, D. A.: Iodochloroxyquinoline (Vioform N. N. R.) as an Amebacide in Macaques, Proc. Soc. Exper. Biol. & Med. **28**: 838 (May) 1931.

4. Mühlens, P., and Menk, W.: Ueber Behandlungsversuche der chronischen Amöbenruhr mit Yatren, München. med. Wchnschr. **68**: 802 (June 30) 1921. Mühlens, P.: Fünf Jahre Behandlung der Amebenruhr mit "Yatren 105," Arch. f. Schiffs- u. Tropen-Hyg. **29**: 491, 1925. Jones, P. H., and Turner, R. H.: Iodoxyquinoline Sulphonic Acid in the Treatment of Amebic Dysentery, J. A. M. A. **93**: 583 (Aug. 24) 1929. O'Connor, F. W., and Hulse, C. R.: Treatment of Amebiasis with Anayodin, Ann. Rep. 19, Med. Dept., United Fruit Company, Boston, 1930, p. 64. Thonnard-Neumann, E., and Valera, F.: ibid., p. 68. Mackie, T. T.: ibid., Ann. Rep. 20, 1931, p. 112.

5. Dr. C. C. Haskell of the Ciba Company, Inc., New York, kindly furnished generous supplies of iodochlorhydroxyquinoline for this study. We are grateful for his cooperation.

fatty infiltration and small necrotic areas were noted in the liver, and also some injury to the renal tubules was seen. These observations suggested that we watch our patients carefully for any indication of liver or kidney damage during and after iodochlorhydroxyquinoline therapy. We found no evidence of such injury in any case, however.

SOURCE OF PATIENTS TREATED

Two separate groups of patients, found infected with E. histolytica, have been treated with iodochlorhydroxyquinoline and observed over a considerable length of time. Since the conditions varied under which each group was treated, they are stated here, since more success in treatment was obtained with one group than with the other.

The first group (cases 1-17, table 2) comprised those seen in the outpatient departments of Mary's Help Hospital and the University of California Medical School in San Francisco. Four Filipinos are included who, although not clinic patients, worked in the university hospital and were found to harbor E. histolytica on routine examination. These patients were given the drug to take at home according to explicit directions, but some of them failed to follow their instructions properly.

The second group (cases 18-47, table 2) comprised a number of inmates at San Quentin Penitentiary found on the routine examination of new entrants to harbor E. histolytica.[6] These were treated under ideal conditions and probably for this reason our results were better. The drug was given in capsules to each man, who was required to swallow them in the presence of a trusted prison pharmacist. The likelihood of reinfection through infected food handlers in the prison we believe was practically eliminated, since early in our work at San Quentin a thorough survey of the mess force was made and men found harboring E. histolytica were changed to other positions and treated. In the San Quentin group a more satisfactory post-therapeutic stool follow-up was possible than in the clinic group.

THERAPEUTIC RESULTS

The data on the results of our treatment of forty-seven amebiasis patients by means of iodochlorhydroxyquinoline are summarized in table 2. Most of the patients received between 200 and 250 mg. of the drug per kilogram of body weight within about thirty days. The smallest effective dose was 120 mg. per kilogram in ten days in a 5 year old child (patient 2). The largest total dose was 600 mg. per kilogram in four and one-half months in an 18 year old Filipino (patient 12). Our criteria for the clinical effectiveness of antiamebic therapy have already been discussed.[7]

By reference to table 2 it may be noted that we had much greater recurrence of infection among the clinic patients (cases 1-17) than among the prison group (cases 18-47). We believe that this was due not so much to lack of effectiveness of the drug as to reinfection from relatives and friends not under observation or treatment, or to other unhygienic environmental factors difficult to control. The prison patients were under ideal control so far as possibility of reinfection was concerned, and it is significant that no recurrences of amebas have been found in this group on frequent stool examination for several months after the treatment was stopped.

A satisfactory follow-up was carried out in all but four patients (12, 14, 15 and 16), who went to sea within a month after cessation of the treatment. Recurrences of amebas in the stools were noted in six of the clinic patients (1, 8, 10, 11, 12 and 13) within one to four months after drug administration was stopped. We have good evidence to believe that these were definite reinfections due to unhygienic environmental factors beyond our control. In one patient only (patient 26) the stools remained positive for E. histolytica during the first course of therapy with iodochlorhydroxyquinoline, but they cleared during a second course of treatment with a slightly higher dose and remained so.

Our results clearly indicate the importance of proper hygienic control of environmental factors in evaluating antiamebic therapy. When such control is possible, iodochlorhydroxyquinoline in the dosage used and recommended by us is a safe and very effective drug with which to treat human amebiasis.

CONCURRENT INFECTIONS

We found a total of thirty-two concurrent infections of E. nana, twenty-five of E. coli, nine of Iodamoeba, four of Chilomastix, ten of Giardia, and one each of Enteromonas and Trichomonas, as well as two combined infestations with hookworm and trichuris (cases 13 and 16).

Following treatment, there were twenty infections of E. nana, of which twelve were cases discovered during the follow-up examination and eight were cases unaffected by treatment. Similarly, five cases of Giardia were discovered after treatment, while of the five cases found before, only one failed to clear. Five cases of E. coli were discovered after treatment, while of the twenty previously found, all but four were eliminated by the drug. Of the nine cases of Iodamoeba and four of Chilomastix, only one each remained after treatment. Enteromonas in patient 4 was discovered after treatment. From these results it appears that iodochlorhydroxyquinoline may act as a protozoacidal agent in common intestinal infestations with the exception of E. nana and Giardia.

OTHER TREATMENT

Six of our forty-seven patients had previously been treated for amebiasis, but unsuccessfully. All six (1, 4, 7, 15, 46 and 47) had received emetine in full recommended doses with only temporary relief. Patient 7 had sixteen doses of emetine each of 60 mg. intravenously, followed by a total dose of 200 tablets of bismuth emetine iodide. Since the stools remained positive, he was given, six months later, another course of emetine therapy of nine intravenous injections of 60 mg. each. The stools, however, continued to contain E. histolytica until therapy with iodochlorhydroxyquinoline was instituted. Three patients (1, 46 and 47) had been treated by us previously with a variety of antiamebic agents, including emetine, acetarsone, chiniofon and carbarsone, but with unsatisfactory results. Patient 1, however, was uncooperative and continually exposed to reinfection. Two patients (25 and 26) were treated with arsphenamine for syphilis during the course of antiamebic therapy with iodochlorhydroxyquinoline.

SUMMARY

The clinical trial of iodochlorhydroxyquinoline (Vioform N. N. R.) in human amebiasis is justified on

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the results of its experimental chemotherapeutic comparison with sodium iodohydroxyquinolinesulphonate (Chiniofon N. N. R.). A total dose of 15 Gm. given orally in two courses of 0.75 Gm. daily for ten days with a week's rest period between appears to be effective in clearing the stools of E. histolytica in the average case of human amebiasis. The drug is conveniently dispensed in capsules of 0.25 Gm. each.

In forty-seven unselected cases of human amebiasis, iodochlorhydroxyquinoline in the dosage recommended resulted in clinical "cure" in thirty-eight cases, as determined by frequent stool examination during a follow-up period of from three to six months. Six recurrences were found in seven patients subjected to continued danger of reinfection from infected friends or relatives refusing treatment. Three patients could not be followed longer than one month after treatment was stopped, but during this period their stools were free from amebas. No evidence of toxicity from the drug was noted in any patient.

Parnassus and Third avenues.

STUDIES IN CRETINISM AND HYPOTHYROIDISM IN CHILDHOOD

I. BLOOD CHOLESTEROL

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This study on the basis of blood cholesterol has as its objective, first, the establishment of an additional method for regulating thyroid therapy and, second, an improved understanding of the clinical course of the thyroid deficient child. As these children are followed from month to month, it is apparent that the basal metabolic rate, as ordinarily determined by present methods in young children, is unreliable. The basal metabolic rate, although valuable, is not a specific test and, as Du Bois [1] indicated in cretinism, the comparison with normal standards often presents great difficulties. The basal metabolic rate, therefore, should not be the principal guide in the progress of these patients. Furthermore, clinical impressions have many limitations.

In searching for an additional aid in determining the dosage of thyroid medication to a less empirical extent and the progress and prognosis in the thyroid deficient child, I had my attention called to the work done at the Lahey Clinic [2] with hypothyroidism and hyperthyroidism in adults.

The Boston investigators saw the advisability of getting a further laboratory aid to check on the severity of hypothyroidism or hyperthyroidism, since the basal metabolic rate did not always give a true picture, and the clinical impression was difficult to define. They found that patients with rates of —25 and cholesterol values of over 200 were benefited by thyroid medication. A striking relationship between hypothyroidism, blood cholesterol, basal metabolic rate and clinical improvement was observed.

In 1922, Epstein and Lande,[3] studying thyroid disorders, found low cholesterol values in hyperthyroidism and high values in hypothyroidism. These observations had experimental support, for when thyroidectomy was done in hyperthyroidism the blood cholesterol rose in value. In hypothyroidism, on the other hand, the administration of thyroid orally or thyroxine parenterally caused a fall in cholesterol.

Epstein attempted to demonstrate the existence of an inverse relationship between blood cholesterol and the basal metabolic rate. Such relationship was suggested to him because in nephrosis the cholesterol is high and the basal metabolic rate is low. That a definite inverse relationship exists is supported by the views of many workers.[4]

At the Lahey Clinic, forty-seven adults with hyperthyroidism and twenty-three with hypothyroidism were studied. In the former, the average cholesterol was 130 and the basal metabolic rate 51 plus. In the latter, the average cholesterol was 230 and the basal metabolic rate, —30. They concluded from their study that cholesterol reflected better the severity of hypothyroidism and the true clinical condition than does the basal metabolic rate.

French investigators [5] brought about a return of the blood cholesterol values to normal by means of thyroid preparations in clinical patients with hypercholesteremia. Many other investigators [6] found diminished values of cholesterol in exophthalmic goiter and the return to normal of this blood lipid following proper surgical or medical treatment. Likewise, these workers obtained increased values of blood cholesterol in thyroid insufficiency.

Contradictory reports are also available,[7] particularly as applicable to hyperthyroidism. Gextman,[8] from extensive studies in this field, concludes that the relationship between the basal metabolic rate and the cholesterol is true only in extreme cases of hyperthyroidism. Luden,[9] in thirty-five instances of exophthalmic goiter, found the cholesterol value to be within normal even when the basal metabolic rate was 100 plus.

Rabinowitch,[10] after a study based on 2,000 observations in 385 cases of diabetes mellitus, felt that the blood cholesterol was of greater value and more accurate than blood sugar as prognosticating the seriousness of the diabetes. The estimation of this so-called lipid, which is a relatively stable compound, is simple.[11]

Sure and Smith [12] found lipemia in experiments with vitamin B deficiency and felt that the chemical study of the blood lipids might serve as a yardstick by which to measure this avitaminosis.

Similarly, can cholesterol be regarded as an aid in the diagnosis of cretinism and hypothyroidism in childhood and as a guide to therapy?

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Mindful that the exact mechanism regulating cholesterol metabolism is obscure, this investigation was undertaken for the purpose of determining the blood cholesterol relationship in thyroid deficient children, with the possibility of its use as a corroborating test in controlling thyroid dosage and maintaining metabolism at a normal level.

To establish an average blood cholesterol for the group considered in this paper, the values [13] of this lipid were determined in twenty hospitalized and five ambulatory children, ranging in age from 2 months to 11 years; twelve of these were boys, and thirteen, girls. Twelve of these patients were under 4 years and, of these, six were under 1 year. The determinations excluded nephrosis, nephritis, diabetes mellitus, purpuras, anemias and blood dyscrasias, as well as other diseases in which cholesterol metabolism may be definitely altered. The average level of blood cholesterol in this group was 190 plus; the highest value was 217 in three instances, the lowest 129.

Boyd [14] regards any values in excess of 200 as indicative of hypercholesteremia. Leopold,[15] in thirty-five normal children ranging in age from 3 to 12 years, found an average blood cholesterol of 173. Rabinowitch, in forty-four children under 14 years of age, found the blood cholesterol values to be similar in range to those found in normal adults. McEachern and Gilmour [16] found in twenty-eight adults the normal values to range between 130 and 200 mg. The literature [17] includes many other reports of blood cholesterol in infants and older children.

Hypercholesteremia is existent in the children in this study. Of the present series, eight are boys and four are girls, ranging in age from 3 months to 16 years. The highest cholesterol values in these children when they were not receiving thyroid varied as follows: 277, the lowest, in the 4 month old male cretin; from 312 to 384 in five; 416 to 454 in three; 625 in one, and 782, the highest reading, in the 13 year old female cretin. In one of the patients the cholesterol was not obtained, since the child was in the hospital before the present study. At no time would his parents allow the withdrawal of thyroid for a short period to determine the cholesterol when not under treatment. This boy had on admission three epiphyseal centers and, in less than one year under therapy, eight epiphyseal centers appeared.

The average cholesterol value of our group under treatment is 171, the only determination above 200 being in J. S., a boy, aged 3½ years, whose carpal bones showed at the onset of treatment ossification equivalent to a 1 year old child. It was impossible to obtain a basal metabolic rate of sufficient accuracy and satisfaction in this patient. He had received three-fourths grain (0.05 Gm.) of thyroid a day prior to admittance, at which time his cholesterol was 227. After several weeks without thyroid, his cholesterol rose to 313, and when he received treatment the cholesterol fell 96 points.

When it is impossible to obtain basal metabolic rates in older children, owing to unmanageability, or in infants because of lack of enclosed respiratory chambers, cholesterol determinations may serve as contributory aids.

This was demonstrated in M. B., a boy, aged 4 months, in whom we were unable to determine the basal metabolism. He entered the hospital with a cholesterol of 156, having received medication at another institution. The patient possessed a suggestive facies, macroglossia and a characteristic croak. After a short period without thyroid, the cholesterol rose to 277. Since at first there was slight uncertainty as to his being a cretin, the rise in cholesterol helped the decision, and at present he presents features diagnostic of thyroid deficiency.

It should be borne in mind that the majority of these children were under treatment before this study began, and as it is impossible to keep these children off thyroid for too long periods without serious parental objections, these cholesterol determinations may not represent the maximum high values. However, merely keeping thyroid away for short periods in a previously treated child with low cholesterol brings not only a return of hypothyroid characteristics but a definite rise of cholesterol as well.

G. M., a boy, aged 9½ years, had been under treatment previous to the undertaking of this study. It was not quite clear that he was a cretin, but after two months without treatment he presented typical characteristics.

April 12, 1932, up to which time he had been receiving from 2 to 3 grains (0.13 to 0.2 Gm.) of thyroid a day, it was decided to stop thyroid. At this time his cholesterol was 156, the basal metabolic rate was plus 47, the pulse 94, and the weight 58¾ pounds (26.6 Kg.). In the two months that thyroid was withheld, his weight rose to 65⅛ pounds (29.5 Kg.), a gain of 6⅜ pounds. The cholesterol rose to 454, a change of 298 points; the basal metabolic rate fell 58 points, and the pulse fell 40 points. When thyroid (2 grains daily) was started, the cholesterol fell to 172, a change of 282 points, the basal metabolic rate rose 48 points, the pulse rose 42 points and he lost 5⅞ pounds. After the two months without medication, the hair had grown coarse and the abdomen large, and myxedema appeared.

Without becoming involved in speculation as to the cause for the excess of this so-called lipid, it might be said that a relationship exists between cholesterol, the basal metabolic rate, and thyroid dosage. For the purpose of ascertaining whether a definite quantitative relationship can be demonstrated, two cretins are now being studied and will be the subject of another paper.

A. B., a boy, aged 13, entered the hospital with a cholesterol of 454 and a basal metabolic rate of —41. The bony development of the wrist was that of a 5 year old child. In fifteen days on approximately 1 grain (0.065 Gm.) of thyroid daily, the cholesterol fell to 200 and the basal metabolic rate rose to 0.

At this time I was interested in the possibility of influencing cretins by other means, as for example insulin, as suggested by Chamberlain,[18] since insulin will diminish the hypercholesteremia in diabetes. The pancreatic hormone was used for forty-three days, during which period thyroid was stopped. The cholesterol rose from 200 to 454 and the basal metabolic rate fell from 0 to —35. When thyroid was again instituted the cholesterol fell to 208, a fall of 246 points,

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and the basal metabolic rate gradually rose 71 points. In the course of a little over two weeks, the thyroid was rapidly increased from 1 to 8 grains (0.065 to 0.5 Gm.) and the patient was kept on this large dose for a short period, following which improvement in his appearance and mental reaction took place.

The relationship between cholesterol and the basal metabolic rate is further shown by J. F., a boy, who, Feb. 12, 1932, had a cholesterol value of 143 and a basal metabolic rate of plus 69. This child returned, April 30, after an absence of eleven weeks, during which time he had received 3 grains of thyroid for seven weeks, 1½ grains (0.1 Gm.) for two weeks while ill with chickenpox, and no thyroid for another period of two weeks. The cholesterol now was 238, having risen 95 points, and the basal metabolic rate was —3, a fall of 72 points. In addition to the cholesterol rise and the basal metabolism fall, the abdomen had enlarged, the hair was coarse, and the boy was sluggish, symptoms not present eleven weeks earlier.

Incidentally, as work goes along with this interesting substance, many problems arise, as for instance the determination of a maximum amount of thyroid beyond which it is useless to proceed, because improvement has reached its physiologic limit. J. F. exemplifies this, as he seemed to do just as well on 2 grains of thyroid as on 3 grains, although he showed no toxic signs on the increased dosage.

The possible use of blood cholesterol as an index in the regulation of thyroid dosage is evidenced by A. K., a girl, who had been under treatment for one year before the present work was started. She had entered the hospital in October, 1930, with an admission cholesterol of 782 and a basal metabolic rate of —6. Thyroid therapy was instituted, starting with three-fourths grain and gradually increasing to 3 grains a day. During her stay in the institution the cholesterol fell to 179 and the basal metabolic rate rose to plus 77. After she left, the thyroid was fed irregularly.

She again came under observation, Oct. 6, 1931, at which time the basal metabolic rate was plus 69, the cholesterol 417, and she was receiving 1½ grains of thyroid daily. She had gained weight, the temperature was subnormal and her parent stated that she was irritable. The high cholesterol value, however, attracted attention, and because of this the thyroid was increased, the basal metabolic rate being disregarded. The result was clinical improvement, with the basal metabolism remaining at the same level, and a fall in cholesterol to 227.

COMMENT

A relationship exists between hypercholesteremia and hypothyroidism in adults, as is indicated in a review of the literature. It was undertaken to ascertain the presence of a similar relationship in hypothyroidism of children.

The blood cholesterol was determined in twenty-five children in whom no known derangement of cholesterol metabolism was present, and the average was found to be 190 plus. This value for normal cholesterol is substantiated by the work of other investigators in this field.

Hypercholesteremia was found in the twelve thyroid deficient children studied. The values ranged from 277 to 782. Thyroid therapy definitely lowered the blood cholesterol in the cases cited, in addition to raising the basal metabolic rate and effecting clinical improvement.

It is desirable to have an additional method for the diagnosis and treatment of thyroid deficient children, particularly in infants and borderline cases. The use of cholesterol as an aid in the diagnosis and regulation of thyroid dosage offers definite possibilities.

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A NEW SIGN OF PERICARDIAL EFFUSION

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The determination of moderate quantities of fluid within the pericardial cavity by physical diagnosis is too often indecisive. Even the roentgenologic diagnosis is by no means infallible. Of all the evidences that are conventionally employed, I have found that the conjunction of three signs is usually conclusive in determining the diagnosis of pericardial effusion; in the order of their importance, they are: (1) widening of the area of cardiac flatness, (2) abrupt transition from pulmonary resonance to cardiac flatness and (3) widening of the cardiac dulness in the second intercostal space. Of these three signs, only the second, so far as I can gather, has not been described before. No one of these signs, taken singly, is conclusive, but together they form a triad which is thoroughly reliable, as confirmed by roentgen examination or at autopsy.

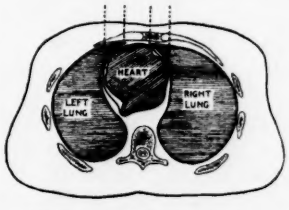

Fig. 1.—Schematic representation of cross-section of normal chest. (After Braune, C. W.: Topographisch-anatomischer Atlas, Leipzig, Veit & Co., 1886-1888.)

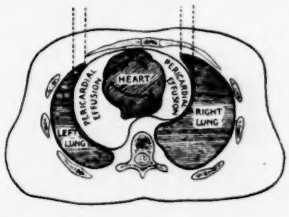

Fig. 2.—Schematic representation of cross-section of chest with pericardial effusion. (After Conner, L. A.: Am. Heart J. 1: 421-433 [April] 1926.)

The physical basis for these signs is obvious. The normal area of cardiac flatness is comparatively small; it rarely extends beyond the left border of the sternum, and from this line it extends to the left to within 2 cm. of the nipple line (fig. 1). When the heart is enlarged, this area obviously increases, but even when the heart is greatly enlarged, as for instance in the bovine hearts of aortic insufficiency, the area of flatness rarely attains the size witnessed in pericardial effusions of even moderate grade. On percussion, it is most unusual for an enlarged heart to give a flat sound up to the right border of the sternum into the right side of the chest. The determination of the left outline of the area of cardiac flatness is of less significance. Broadly speaking, therefore, when an area of cardiac flatness extends to the right border of the sternum, a pericardial effusion is suggested.

The abrupt transition of pulmonary resonance to cardiac flatness is due to the practical disappearance of the lung-filled angle between the heart and the anterior wall of the chest owing to the greatly dilated pericardial sac (fig. 2).

The acuteness of the angle subtending the border of the lung, on the one hand, and the extreme edge of the pericardial sac, on the other, determines the area of

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cardiac dulness, which normally is from about 2 to 3 cm. in width. As this angle is almost completely obliterated in pericardial effusions, the normal circumferential zone of cardiac dulness becomes reduced to almost nothing, and the abrupt transition of pulmonary resonance to flatness is the consequence. To determine this sign, deep percussion is essential.

The widening of the cardiac outline in the second intercostal space is merely another evidence that pericardial effusions have a pronounced tendency to accumulate at the base of the pericardial sac. This widening is confirmatory of one of the important diagnostic criteria of pericardial effusions in roentgen diagnosis, namely, the increased widening of the cardiac shadow at the apex of the cardiac triangle.

NICOTINE POISONING BY ABSORPTION THROUGH THE SKIN

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Nicotine is one of the most deadly poisons known to man and, at the same time, one with which he comes into most intimate contact in his daily life. It is somewhat surprising, therefore, that serious cases of nicotine poisoning are not reported more frequently. The main reasons for the infrequency of serious poisoning are that the percentage of nicotine in tobacco is too small to make it easy to get a fatal dose from the ingestion of tobacco or the inhalation of its smoke, and that nausea and vomiting are early symptoms which ordinarily prevent further absorption of the drug. Fatal poisoning from tobacco, although rare, has been reported from smoking, from swallowing tobacco, from tobacco enemas, and from its use as a local application to the skin in favus.[1] The commercial insecticides that contain high percentages of nicotine are, of course, far more dangerous. McNally [2] has reported seven fatal cases of nicotine poisoning from the drinking of an insecticide; two of these were accidental, and death occurred within five minutes in each case. The widespread use of nicotine solutions as sprays in greenhouses would lead one to expect cases of poisoning among gardeners. A number of florists of wide experience with whom this was discussed were unanimous in declaring that they had never heard of a case of serious nicotine poisoning. That such may occasionally occur, however, is shown by several recent reports of poisoning in gardeners.

Wilson [3] reports an instance of moderately severe nicotine poisoning in two gardeners who had been painting peach trees with a 2.7 per cent solution of nicotine and in so doing had splashed their hands, forearms and faces with the solution. In these cases absorption apparently took place through the skin.

Fretwurst and Hertz [4] report a case of mild poisoning in a gardener who was spraying a tree outdoors with a 20 per cent nicotine solution. In addition to the well recognized symptoms of vomiting, prostration and loss of tendon reflexes, these observers also demonstrated an increase in the blood sugar to 175 mg. per hundred cubic centimeters, leukocytosis, and inversion of the T waves in the electrocardiogram. Nicotine was recovered from the urine. In this case absorption was apparently through the lungs.

Lockhart [5] describes an instance of severe poisoning in a girl employed in the manufacture of a nicotine insecticide. Two drachms (7.5 cc.) of a 95 per cent solution of nicotine was spilled on the sleeve of her overalls. She immediately removed the overalls, washed her arm with hot water, wiped off the sleeve, put the overalls on again and returned to work. Twenty minutes later she collapsed. She was pallid, cold, speechless and "practically pulseless." For half an hour she appeared to be on the verge of death but finally recovered. Traces of nicotine were recovered from vomitus obtained three hours later. In this case absorption was clearly through the skin.

The following case is an example of severe nicotine poisoning as a result of absorption through the skin:

A man, aged 35, American, a florist, was seen in consultation for an insurance company, Oct. 24, 1932. His past history was irrelevant except for the fact that he had been in the habit of smoking three or four pipefuls of tobacco daily and that he had frequently used diluted nicotine solutions in spraying plants without serious symptoms. Oct. 4, 1932, he came into contact with a concentrated solution of nicotine in the following manner:

While engaged in doing a light electrical repair job at a work bench he sat down in a chair on the seat of which some "Nico-Fume Liquid" (a 40 per cent solution of free nicotine) had been spilled. He felt the solution wet through his clothes to the skin over the left buttock, an area about the size of the palm of his hand, and recognized what it was by its characteristic odor. He thought nothing further of it, however, and continued at his work for about fifteen minutes, when he was suddenly seized with nausea and faintness. He took a drink of water and immediately vomited and continued to retch. He stepped outdoors and found himself in a drenching sweat. His respirations became labored and painful; a physician was called, and he was sent to a hospital in an ambulance. On the way to the hospital he lost consciousness and did not recover until three hours later. During this period he was described by the intern as being semicomatose, writhing, moaning and having rapid, irregular gasping respirations. The heart beat was described as "very irregular, at a rate of 86 per minute," the rectal temperature was 95.6 F., and respirations were 40 per minute. The blood pressure was 110 systolic and 45 diastolic. The pupils were pin-point in size. The pulse was feeble and the extremities were cold. No tendon reflexes could be elicited. There was no local skin reaction over the buttock. The urine had a specific gravity of 1.018, with a "slightest possible trace" of albumin, 2 per cent sugar and a large amount of acetone. The urinary sediment showed from three to five white blood cells per high power field, but no red blood cells or casts were found. He was given 1 ampule of caffeine sodiobenzoate subcutaneously, and kept warm with hot water bottles and blankets. The respirations continued labored throughout the night. Six subsequent urine specimens voided that night and three the next day were negative for sugar.

The following day his symptoms had disappeared except for a feeling of substernal pressure, weakness and slight nausea. The irregularity of the heart continued but caused no subjective symptoms. He was discharged from the hospital on the fourth day. On discharge from the hospital he was given the same clothes that he had worn when he was brought in. The clothes had been kept in a paper bag and, according to the patient, were still damp where they had been wet with the nicotine solution. Within an hour after leaving the hospital he was again seized with nausea, vomiting, sweating and difficulty in breathing and was readmitted to the hospital. He showed no change in physical signs except for profuse sweating and apparent dysp-

From the Thorndike Memorial Laboratory, Second and Fourth medical services (Harvard) of the Boston City Hospital and the Department of Medicine of the Harvard Medical School.

1. McNally, W. D.: Nicotine Poisoning, J. Lab. & Clin. Med. **5**: 213 (Jan.) 1920 (for bibliography).
2. McNally, W. D.: A Report of Seven Cases of Nicotine Poisoning, J. Lab. & Clin. Med. **8**: 83 (Nov.) 1922.
3. Wilson, D. J. B.: Nicotine Poisoning by Absorption Through the Skin, Brit. M. J. **2**: 601 (Oct. 11) 1930.
4. Fretwurst, F., and Hertz, A.: Akute Nicotinvergiftung, Ztschr. f. klin. Med. **122**: 641, 1932.
5. Lockhart, L. P.: Nicotine Poisoning, Brit. M. J. **1**: 246 (Feb. 11) 1933.

nea. The temperature was 99.6 F., pulse rate 84 and respiration rate 20 per minute. There was no sugar in the urine. He remained in the hospital for four more days. When first seen by me, three weeks after his accident, his symptoms consisted of weakness, sweating, vertigo on change of position, insomnia, nervousness and a mild, constant substernal pressure not aggravated by exertion. All of these symptoms gradually cleared up in the course of the following three weeks, although extrasystoles were constantly present on repeated examinations. Electrocardiograms showed that the extrasystoles were arising from two different foci in the ventricle. The significance of these extrasystoles is not clear. They were still present in undiminished frequency three and one-half months after the poisoning, but they have never produced subjective symptoms and may have been present previously.

The patient appeared to be in the best of health at his last examination three and one-half months after the accident. His only complaint was that he was unable to go into a greenhouse in which the nicotine spray was being used without suffering immediate nausea. He was, however, able to enjoy five or six pipefuls of tobacco a day, so that it does not seem likely that he had become unduly sensitive to the effects of nicotine.

Since reported cases of nicotine poisoning are not common, it may not be amiss to point out that this patient's symptoms are quite characteristic of the condition. The classic features are sweating, nausea, vomiting, dyspnea, coma, convulsive seizures, pin-point pupils, a pulse rate that is at first slowed and later accelerated, subnormal temperature, absence of tendon reflexes, polymorphonuclear leukocytosis, increased blood sugar with glycosuria and electrocardiographic signs suggesting a toxic effect on the myocardium. Nicotine may be demonstrated in the urine.

Skin Absorption of Nicotine Insecticides in Cats

Name	Experiment No.	Weight in Kg.	Dose in Cc.	Symptoms
"Nico-Fume Liquid" (40% free nicotine)	1	2.7	10	Rapid, shallow respirations; convulsive twitchings; death in 21 minutes; heart and respirations stopped simultaneously
	2	4.5	10	Rapid, irregular respirations; convulsive twitchings; vomiting; generalized convulsions; respirations slowed; respirations stopped in 26½ minutes; heart stopped in 28 minutes
	3	2.0	3	Rapid, shallow respirations; convulsive twitchings; gasping respirations; heart stopped in 73 minutes
	4	1.8	3	Rapid, shallow respirations; convulsive twitchings; gasping respirations; respirations stopped in 94 minutes; heart stopped in 98 minutes
	5	2.8	2	Rapid, shallow respirations; twitching; apparent unconsciousness; after 3 hours the nicotine solution was washed off; animal appeared well next day, then vomited, refused food, and died after 7 days
"Black Leaf 40" (40% nicotine sulphate)	1	3.7	10	No effect
	2	3.5	10	No effect
	3	3.5	10	No effect

"Nico-Fume Liquid" is, according to the manufacturer, a "forty per cent water solution of commercial (free) nicotine, there being no other substance of an insecticidal nature present than the nicotine." [6]

In the case here cited, poisoning unquestionably occurred by absorption of nicotine through the skin. While this mechanism has long been recognized by pharmacologists, it does not appear to be regarded as a hazard by florists who use concentrated nicotine solutions extensively as insecticides. Indeed, the containers in which "Nico-Fume Liquid" is sold freely to the public bear no warning as to the dangers of skin absorption. It appeared worth while, therefore, to investigate the effect of the application of "Nico-Fume Liquid" to the skin of lower animals.

Five experiments with cats were carried out. The procedure in each instance was as follows:

The unanesthetized animal was fastened on its back to a board. The fur over the lower part of the abdomen was cut short with scissors, but the skin was not shaved or traumatized in any way. A measured amount of "Nico-Fume Liquid" was poured on the skin and very gently sopped and rubbed in with the gloved finger to make sure it was in contact with the skin. The area of skin wet with the solution was from 5 to 7 cm. in diameter in each case. The wet area was then covered with an inverted glass dish held down tightly with adhesive tape to prevent the fumes from escaping.

The results of the experiments, which are briefly summarized in the accompanying table, indicate that free nicotine may be readily absorbed through the intact mammalian skin. As little as 3 cc. of a 40 per cent solution applied to the skin of a cat may be rapidly fatal. Since nicotine in the form of a solution of nicotine sulphate is also widely used as an insecticide, it seemed advisable to investigate its properties in regard to skin absorption. Accordingly, an insecticide known as "Black Leaf 40" containing 40 per cent of nicotine sulphate was employed in the same manner. Ten cubic centimeters of this solution applied to the cat's abdominal wall produced no effect whatever in three different animals. One of these cats was subsequently exposed in the same way to the same dose of "Nico-Fume Liquid," to which it promptly succumbed. The difference in skin absorption between the solution of free nicotine and the sulphate is in keeping with differences noted in skin absorbability between other alkaloids and their salts.

If concentrated free nicotine solutions are as dangerous as indicated by the experimental work and the clinical case here reported, the question arises as to why poisoning is not more frequently encountered. The answer lies in the fact that the concentrated solution has a most offensive odor, appearance and consistency. It is a very dark brown slimy fluid with a peculiarly nauseating odor. For these reasons even a careless person would not allow it to remain in contact with his person except under unusual circumstances, as in this case, in which it would have been necessary for the man to remove his clothes. Furthermore, the solutions are ordinarily highly diluted for insecticidal purposes, the concentrated solutions being made up merely for convenience in shipping and handling.

SUMMARY

A case of nicotine poisoning resulted from accidental absorption through the skin of a widely used insecticide containing 40 per cent of free nicotine. In experiments with cats it was found that small amounts of this substance applied to the intact skin were readily absorbed with fatal results. It was observed that a similar insecticide containing 40 per cent of the sulphate salt of nicotine produced no toxic symptoms when applied to the skin of the cat.

264 Beacon Street.

6. Quoted from a letter from the manufacturer (Tobacco By-Products and Chemical Corporation) in response to an inquiry from the Chemical Laboratory of the American Medical Association.

RESPIRATORY FAILURE AND THE DRINKER RESPIRATOR IN POLIOMYELITIS

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During and following the epidemic of poliomyelitis in 1931, numerous additions have been made to the literature of this subject. My purpose in this paper, based on a study of thirty-six cases, is to record observations made in cases of poliomyelitis culminating in paralysis of the respiratory muscles, to delineate the clinical picture when respiratory paralysis is fully established, to outline the results of treatment with the use of the respirator, and, finally, to describe the indications for removing the patients from the Drinker apparatus.

TYPES OF PARALYSIS AFFECTING THE RESPIRATORY APPARATUS

1. *Ascending Paralysis.*—Most of the cases of poliomyelitis leading to respiratory involvement begin with paralysis of one or both of the lower extremities. Thirty-five of the thirty-six patients in this series presented an initial weakness of the lower extremities, followed by absent knee jerks and complete flaccidity of these limbs. Several hours later the cremasteric and abdominal reflexes disappeared, and within twenty-four hours the intercostals, the diaphragm and the upper extremities became involved.

2. *Descending Paralysis.*—The paralysis may begin with weakness of the shoulder muscles followed by flaccid paralysis of both upper extremities, and within a very short time the diaphragm may become involved. In the last instance, respirations are carried on by the intercostals and the accessory muscles of respiration. When the patient lies quietly in bed and is covered, little respiratory embarrassment may be noted; the color is good, respirations are apparently fair and the alae nasi barely dilate. However, on careful examination one will find the abdomen retracting on inspiration and forced out on expiration. This picture is more pronounced when the patient exerts himself. In one patient, paralysis spread downward and involved the intercostal and abdominal muscles and both lower extremities. The descending type of paralysis is rare.

3. *Ascending-Descending Paralysis.* — The paralysis may begin in one lower and one upper extremity. Gradually, both upper and both lower extremities become involved, and the infection continues to spread downward and upward simultaneously, ultimately producing intercostal, diaphragmatic and abdominal paralysis. The ascending-descending type of paralysis is also rare and comprises one case in this series.

RESPIRATORY PARALYSIS FULLY ESTABLISHED: RESPIRATOR INDICATED

The clinical picture changes: the child lies in bed motionless; the eyes have a fearful stare; the face is dusky; the lips are cyanotic; the alae nasi dilate with every inspiration; the accessory muscles of respiration, especially the sternocleidomastoid, become visible with every inspiration; speech is difficult, quick and whispered; the sentences are short and broken up by inspirations between words and occasionally between syllables; respirations are extremely shallow; the chest and the abdomen are practically vibrationless; the temperature steadily rises and may attain 105 F.; the pulse progressively mounts; the child perspires freely; sleep is impossible and the patient may remain awake for days, growing weaker by the hour. If respirator aid is not forthcoming and the patient is allowed to remain in this condition long enough, the accessory muscles of respiration, particularly the sternocleidomastoids, may pull the clavicles out of the sternoclavicular joints and the patient may finally die of exhaustion.

A boy, aged 16 years, was admitted with respiratory muscle paralysis, breathing by means of the accessory muscles of respiration, chiefly the sternocleidomastoids. No respirator was available for forty-eight hours. In that time there occurred a dislocation of the sternal head of the right clavicle, evidently pulled out of place by the right sternocleidomastoid muscle.

THE EFFECT OF THE DRINKER RESPIRATOR ON RESPIRATORY PARALYSIS

Immediately after the patient is placed in the respirator, cyanosis disappears and the face assumes its natural color. The facial expression is that of satisfaction and appreciation. For the first few minutes the patient's breathing is out of rhythm with the respirator. This is indicated by the pull of the accessory muscles of respiration of the neck, by the dilatation of the alae nasi, and by the mouth being kept open, presumably swallowing air. However, the rhythm between the patient's breathing and the respirator soon becomes synchronous and the patient falls into a profound sleep, which may last for twenty-four hours or more. When he awakens, he takes fluids readily and soon learns to swallow solid food. Henceforth the patient becomes a nursing problem until such time as he is ready to be removed from the machine. In the Kingston Avenue Hospital series we treated fourteen cases of this type.

FACTS ABOUT THE RESPIRATOR

There are two facts about the respirator that should not be overlooked. They are:

1. *Negative Pressure.*—When the respirator was first used all patients, regardless of age, were placed into it on 15 cm. of negative water pressure, as suggested by Professor Drinker.[1] The first two patients did well. The third patient, after several days in the respirator, suddenly became cyanotic; the synchronism of rhythm between the patient's breathing and the respirator was lost; the temperature rose to 103 F. and the pulse to 170. Physical examination showed no evidence of cranial nerve involvement, and the patient swallowed well. The chest was resonant to percussion and auscultation revealed crepitant râles over both bases posteriorly. The sudden change in the patient's condition was therefore attributed to bilateral bronchopneumonia, proved at postmortem examination. These three patients were side by side under the same nursing care, under the same atmospheric conditions, in exactly the same type of respirator and under the same negative pressure and respiratory rate. The exciting factor causing the bronchopneumona remained obscure. To avoid similar recurrences, all patients under 10 years of age were started at 10 cm. of negative water pressure. This was increased 1 cm. every three to four days to a level most comfortable to the patient, which was never

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From the services of Drs. Harold L. Barnes and Alexander Spingarn, Kingston Avenue Hospital for Contagious Diseases.

1. Drinker, Philip, and McKhann, C. F.: The Use of a New Apparatus for the Prolonged Administration of Artificial Respiration: A Fatal Case of Poliomyelitis, J. A. M. A. **92**: 1658 (May 18) 1929.

higher than 15 cm. Following this procedure, not a single patient developed bronchopneumonia while in the respirator.

2. *Respiratory Rate.*—There are two types of the Drinker respirator commonly in use at present.[2] The old type has three speeds of respirations: 15, 30 and 45 times a minute; the new type has respiratory rates of 15 and 30 a minute. It is important that patients requiring respiratory aid should be placed in a respirator at a rate equivalent to the normal respiration. The following incident illustrates this point:

An infant under 1 year of age died in a respirator set at 45 respirations a minute. Immediately afterward an adult, aged 18, developed respiratory muscle paralysis and was placed in the same respirator. But the physician on duty failed to move the alternator on the respirator to 15 respirations a minute. Three minutes later the patient became cyanotic, developed tonic spasms of the face and jaw muscles and went into coma. The physician opened the respirator and discovered his mistake. He moved the alternator to 15 respirations a minute, closed the respirator, and henceforth the patient did well. The phenomenon was explained on the basis of hyperventilation causing an alkalosis.

PROGNOSIS IN CASES OF RESPIRATORY MUSCLE PARALYSIS

The fate of a given patient placed in the respirator cannot be determined for some time in spite of the apparent improvement during the first few hours. At this stage of the disease, one cannot foretell whether the infection will be arrested below or above the bulb, or whether it will continue on to the cerebrum. The temperature and pulse rate are of no prognostic importance. The general appearance of all cases is almost identical. They may remain with pure intercostal and diaphragmatic paralysis or they may go on to (*a*) Landry's paralysis or (*b*) bulbospinal paralysis.

(*a*) *Landry's Paralysis.*—All patients destined to develop Landry's paralysis show slight improvement for the first few hours in the respirator. These patients may then be divided into two groups: The patients in the first group become progressively worse and die within twelve to twenty-four hours; the patients in the second group linger for several days and then die. The terminal picture of the patients in the two groups is almost the same: their faces become dusky, the lips cyanotic, the eyes roll back and the eyelids remain half open. The general appearance is that of extreme anguish. The breathing is out of rhythm with the respirator, the alae nasi dilate, mucus accumulates in the mouth, and sleep lasts for ten minutes only. During this period the patients remain mentally clear. Finally they develop unilateral or bilateral facial twitchings and gradually sink into coma. The temperature rises to 105 F. or higher; the pulse becomes rapid, thready and irregular; the patients vomit and finally die. There were seventeen cases in this group.

(*b*) *Bulbar Symptoms Superimposed on Intercostal Diaphragmatic Paralysis.*—There are two groups of cases in this division that deserve special consideration: The first group comprises cases of intercostal and diaphragmatic paralysis along with bulbar symptoms, the most prominent of which is inability to swallow. The second group shows the same intercostal paralysis without disturbances in swallowing but with paralysis of some of the bulbar and cranial nerves, the commonest being the facial, part of the vagus, the glossopharyngeal and the spinal accessory.

Group 1. The patients in group 1, when placed in the respirator for the first few hours, show the improvement described. Shortly afterward, bulbar nerve palsies may supervene on intercostal diaphragmatic paralysis. The signs and symptoms that these cases present depend on whether the involvement is unilateral in the bulb or bilateral. When the paralysis is unilateral, there is difficulty only in swallowing and the patients require no therapeutic aid except artificial respiration, which the respirator ably supplies. These patients have an excellent chance to survive. When the paralysis in the bulb is bilateral, and it is more frequently so, swallowing becomes impossible; the fluids regurgitate through the nose, and saliva drools from the mouth. These cases invariably prove fatal. The patients do not die from paralysis of the respiratory center, since they go on breathing in the machine long after the heart stops. The cause of death, in my opinion, is paralysis of both vagal nuclei, and the terminal picture suggests this explanation. The patients become drowsy, somewhat cyanotic, and vomit. Tachycardia and irregularity of the heart supervene. Respirations are slow and irregular and out of rhythm with the machine and are carried on by the accessory muscles of respiration of the neck. The soft palate reflex and the oculocardiac reflex are lost.

Therapeutically, a great deal may be done for these patients but with poor results. Atropine sulphate hypodermically helps by drying up the mucus in the throat and bronchi. Repeated aspirations from the throat with the aid of a suction apparatus give wonderful relief. Gavage cannot be used in these cases, since postural drainage is of great importance. The two cannot be combined, because the fluid runs out of the stomach into the pharyngeal space and almost suffocates the patient. Intravenous dextrose can be given only with difficulty, because the patient's arm has to be removed from the respirator for this procedure. Patients usually die within twelve hours after the appearance of the bulbar symptoms. There were four cases belonging to this group.

Group 2: When patients belonging to group 2 are placed in the respirator, they show respiratory paralysis only. These patients, like those in group 1, improve instantly. Sometime later, usually on the second or third day, while the patients are still in the machine, the signs and symptoms of bulbar and cranial nerve palsy begin to appear. The commonest of the cranial nerves involved is the facial. The paralysis may not be noted for several days, because the patients usually lie quiet and talk little. The easiest way to elicit evidence of facial palsy while the patients are in the machine is to ask them to show their teeth or to close their eyes. Most of these patients are very young children and for the first few days do not cooperate well. Nothing can therefore be done until they are sufficiently improved to remain out of the respirator long enough to permit examination. Some of these patients may show only a nasal twang or may be unable to pronounce the consonant *b*. Others may develop hoarseness or squeaky voices, or all these signs may be found in one patient. The patients, though they have bulbar symptoms, have no difficulty in swallowing and do well. They adapt themselves quickly to respirator life and improve slowly. I have seen only one case of this character.

2. A new type of respirator is now available in which the respiratory rate may be adjusted to any number.

IMPROPER INDICATIONS FOR REMOVING PATIENTS FROM THE RESPIRATOR

At no time did we encounter any difficulty in deciding whether a patient required the respirator. The signs and symptoms calling for artificial respiration as described were very simple. The difficulty began when a decision had to be made as to whether a given patient should be removed from the respirator. In 1930, Shambaugh, Harrison and Farrell [3] used the spirometer to determine the vital capacity of their 21 year old patient as a basis for removing him from the respirator, and, when his vital capacity had reached 1,950 cc. and his breathing, while at rest, showed no effort, the patient was discharged. This is the accepted method of determining the ability of a patient to inhale a chestful of air, which ability normally depends on the tonus of the diaphragm and the intercostal and abdominal muscles. We therefore decided to adopt the determination of the vital capacity as a basis for removing patients from the respirator. While this method is practical with adults, it cannot be used in children, in whom cooperation is not so easily obtained. Children, at sight of the spirometer, cry and, when asked to inhale a chestful of air and force it into the mouthpiece of the apparatus, close their mouths and refuse to cooperate. Wilson [4] had similar experiences in small children. We were therefore left in the dark as to the indications for removing patients from the respirator and we were compelled to adopt the following procedure:

If a child having been in the respirator a reasonable time could stay out for eight hours without apparent respiratory discomfort, he was removed from the machine and watched for several days. If the child did not become cyanotic or perspire excessively, slept through the night, breathed without effort and was otherwise apparently comfortable, he was sent to a convalescent ward, where he remained for several weeks before being transferred to an orthopedic institution.

SUBSEQUENT HISTORY OF THESE CASES

Practically all surviving respirator cases were discharged either to orthopedic institutions or to convalescent homes.

CASE 1.—A girl, aged 4 years, well developed and well nourished, who had been in the respirator for twenty-eight days, was the first patient discharged. She remained under observation for several days and was then sent to a convalescent ward, where she stayed for two weeks. During this time she did not show any respiratory embarrassment, took nourishment well and was cheerful and cooperative. At the end of the two weeks she was discharged with a complete quadriplegia to an orthopedic hospital. Three weeks later, or six weeks after she was removed from the machine, she was returned to the hospital for immediate respirator attention. Examination at this time did not reveal any additional neurologic changes. There was no evidence of cranial nerve palsy. The child swallowed well, the voice was clear, and there were no signs of muscular atrophy. The chest and abdomen were moving freely with inspiration and expiration. The face was somewhat dusky. The respiratory rate was 35, pulse 160, and the temperature 100 F. Examination of the chest revealed no evidence of dulness, but there were coarse mucous râles in the entire chest, in front and behind. Inability of the patient to cough was the outstanding symptom. She was constantly attempting to clear the trachea but was unable to do so. A lumbar tap revealed clear fluid under normal pressure without any cells. Therapeutically, everything possible was done: atropine sulphate hypodermically, oxygen inhalation, and finally the respirator as a last gesture to save her life, but without avail. She died in the respirator two days after readmission to the hospital.

CASE 2.—A girl, aged 7 years, who was in the respirator thirty-five days, was watched for several days and then sent to the convalescent ward for two weeks, from which she was transferred to an orthopedic hospital. Four weeks later, or seven weeks after she was removed from the respirator, she was returned to the hospital for replacement in the machine. On admission the signs and symptoms were exactly the same as those present in case 1. The one striking symptom was her inability to cough and to clear the trachea. Every therapeutic resource was tried, without success, and the child died in the respirator fifty-two hours after readmission to the hospital.

Data received from various orthopedic hospitals and convalescent homes revealed that one third of the respirator patients discharged died and that the cause of death on the hospital records was given as bronchopneumonia secondary to poliomyelitis.

The clinical picture and the physical conditions presented by these two cases did not suggest bronchopneumonia alone. Two things were definite: the bronchi and the trachea were full of mucus, and the patients were unable to cough. These are not signs of bronchopneumonia. The cause of death, as it appeared to us, was suffocation, but we lacked pathologic proof. We therefore decided to wait for an opportunity in which the lungs might be studied in conjunction with the pathologic changes in the spinal cord, for a possible explanation of the immediate cause of death.

CASE 3.—A girl, aged 9 years, was admitted with a diagnosis of preparalytic poliomyelitis. Two days after admission, both lower extremities became paralyzed. On the third day she developed respiratory muscle paralysis and was placed in the respirator, in which she remained for twenty-one days. Following a three week period of observation, she was transferred to an orthopedic institution. One and one-half years after her first admission to our hospital she was returned to us for respirator treatment. From the history it was evident that the child developed an infection of the upper respiratory tract, the chief symptoms of which were a slightly congested throat with excessive bronchial secretions. There was no rise in temperature nor was there an elevation in the pulse rate. On the third day of her present illness she suddenly became cyanotic and dyspneic. She responded to oxygen inhalation and atropine sulphate hypodermically. She was apparently doing well for the next two days. Suddenly she once more became cyanotic and dyspneic. At this stage of her illness she was transferred to us. On admission, she was somewhat anemic but alert and responsive. Her chief complaint was inability to cough up mucus, which she stated was choking her. She was constantly attempting to clear the trachea but without success. Her throat was slightly congested, and the tongue was somewhat coated. The chest was resonant to percussion, and auscultation revealed coarse mucous râles in front and behind. The temperature was 100 F.; the pulse was 110, regular as to rate and rhythm, and the respiratory rate was 24. The abdomen was soft and the liver and spleen were not palpable. Neurologically, she showed a complete flaccid quadriplegia with very little atrophy; the abdominal reflexes were present but sluggish; the lower intercostals and the diaphragm were apparently moving freely. It was evident from the moment the patient was admitted to the hospital that unless we removed the mucus from the trachea and the bronchi and gave the child complete chest expansion she might either drown in her own secretions or develop atelectasis. Two methods of procedure lay open before us. One was bronchoscopy with suction, which we considered too drastic; the other was hypodermic treatment with atropine sulphate, which we adopted along with the Drinker respirator for chest expansion. This method of treatment apparently was very effective for a short time: we soon observed that the child's breathing was out of rhythm with the respirator; her face gradually became dusky and her lips cyanotic; the temperature

3. Shambaugh, G. E.; Harrison, W. G., and Farrell, J. I.: Treatment of Respiratory Paralysis of Poliomyelitis in a Respiratory Chamber: Report of Three Cases with One Recovery, J. A. M. A. **94**: 1371 (May 3) 1930.

4. Wilson, J. L.: Respiratory Failure in Poliomyelitis: Treatment with the Drinker Respirator, Am. J. Dis. Child. **43**: 1433 (June) 1932.

remained at 100 F. Repeated physical and radiographic examinations of the chest did not show any signs of pneumonia. The child died in the respirator forty-eight hours after readmission to the hospital.

Permission was granted to examine at postmortem only the heart and lungs. The heart was free from pathologic changes. Both lungs were free, and detachment was easily effected. They were greatly retracted from both the diaphragmatic and the parietal pleural surfaces. In size, they corresponded to those of an infant and measured 13.5 cm. from apex to base. They were dark gray and were studded with numerous subpleural petechiae; the left upper lobe was deep purple and was firm to the touch. Dissection carried into the bronchial tree of this lobe revealed the complete occlusion of the hyparterial bronchus with a yellow plastic mucopurulent plug. Similar occlusions were noted in the bronchiolar ramifications, including the finer bronchioles of this lobe.

Microscopic examination of a section (fig. 1) from the left upper lobe of the lung revealed desquamation of the ciliated epithelial cells lining the bronchioles and bronchi, which were lying free in the mucopurulent plastic exudate along with polymorphonuclear leukocytes. The basement membrane on which the epithelial cells rested was swollen. The underlying vessels were congested and the surrounding tissue was infiltrated with inflammatory cells. The cells of the mucous glands were swollen and granular. Throughout the lung the alveolar walls were relaxed and approximated; some showed evidence of catarrhal inflammation, which was most marked peribronchially. The blood vessels in the alveolar walls were dilated.

PATHOLOGIC CHANGES IN THE SPINAL CORD OF POLIOMYELITIS

The clinical course of poliomyelitis may be correlated with three types of lesions in the anterior horn cells of the spinal cord: (1) an area of edema with perivascular round cell infiltration, (2) the presence of petechial hemorrhages in addition to edema and perivascular round cell infiltration, and (3) complete destruction of the anterior horn cells, along with petechial hemorrhages, edema and perivascular round cell infiltration. While it is convenient thus to describe definite areas of pathologic change in the anterior horn cells, these in fact not only merge gradually into one another but often coexist in different parts of the spinal cord. Applying these pathologic observations to the anterior horn cells of the lower motor neurons comprising the phrenic, intercostal and abdominal nerves, one can perceive that if the pathologic condition is of the edematous type the muscles innervated by these nerves will recover their function as soon as the edema subsides, performing all the physiologic processes assigned to them by nature, including coughing. A patient, therefore, suffering from respiratory muscle paralysis with an edematous type of pathologic spinal cord changes, when placed in the respirator recovers rapidly and completely, usually in the course of two or three weeks, and when removed is able to breathe and cough without difficulty.

When the pathologic changes of the anterior horn cells consist of petechial hemorrhages in addition to edema, recovery of the respiratory muscles is markedly delayed. The edematous anterior horn cells are the first to recover, and the hemorrhagic last. As soon as the edema is absorbed, impulses begin to pass down the axis cylinders to the muscle bundles. If part of the neurons that constitute the phrenic, intercostal and abdominal nerves recover, part of the diaphragm and of the intercostal and abdominal muscles regain their function. Patients suffering from partial paralysis of the respiratory muscles can and do breathe freely and without effort when out of the respirator. However, when patients with partial respiratory muscle paralysis attempt to cough, which requires the entire function of the diaphragm and the intercostal and abdominal muscles, they are unable to do so. The average time that a patient with this type of pathologic spinal cord may have to remain in the respirator is about two months, and he may probably be able to cough by the end of six months.

Cases in which both petechiae and edema were found present in the spinal cord, showed microscopically most of the anterior horn cells intact and their nuclear staining capacity retained. Some showed the disappearance of the Nissl spindles, and loss of straining capacity in the nuclei with margination and extrusion. The gray matter was infiltrated with leukocytes and lymphocytes. Slight degenerative changes were found in the white matter, but the most obvious changes are perivascular infiltration with petechiae.

Lastly, when the pathologic changes of the anterior horn cells consist of cell destruction, hemorrhage and edema, recovery of respiratory muscle function may take months or years or may not occur at all, and the patient may have to spend the rest of his life in the respirator.

Fig. 1 (case 3).—Microscopic appearance of lung.

In health, the lungs are kept constantly expanded and their airways open. Through these tubes, they are the best drained organs in the body. The force that keeps them open is the tonus of the diaphragm and the other muscles of the thorax. When ever this tonus is lowered, as it is in the respiratory muscle paralysis of poliomyelitis, the vital capacity of the lungs is gradually diminished. In the unaerated areas, mucus accumulates until some of the airways are filled and closed. If there happens to be present also inhaled foreign material or mucus from catarrhal inflammation, these conditions also contribute to the blocking of airways. As soon as any part of a lung is thus shut off, the air within it is absorbed into the blood. The occluded lung or lobe or lobules are soon collapsed, and in such collapsed areas any bacteria that happen to be present find conditions favorable for their growth and activity. This conception of the part that atelectasis plays in the development of pneumonia, first clearly stated by Coryllos and Birn-

baum, [5] is now established. It is essentially in this way that all secondary pneumonias develop.

This conception assigns to the tonus of the skeletal muscles of the body a place of prime importance in respiration. It is this tonus that keeps the lungs expanded and prevents atelectasis. The movements of respiration do not consist merely in the alternate contraction and relaxation of the thoracic muscles. In reality, these muscles pass at each breath from one tonus level to another and back again.[6] When the tonus of the entire musculature of the body is depressed, respiration is depressed also. The capacity of the thorax is greatly decreased by the relaxed and elevated diaphragm and by the flaccidity of the other respiratory muscles. In the partially deflated lungs, atelectasis readily develops, and if infection is present pneumonia results. The common sequence is lowered muscular tonus, decreased vital capacity, occlusion, atelectasis, pneumonia.

Nature apparently foresaw the possibility of bronchiolar occlusion by means of foreign bodies or mucus plugs and bestowed on the human body a mechanism

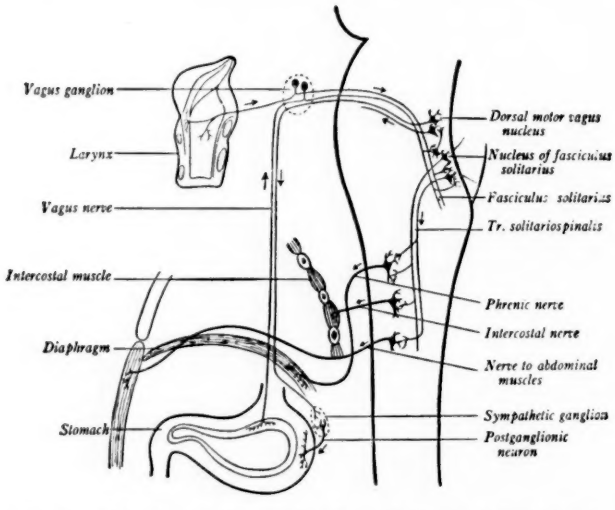

Fig. 2.—Mechanism of the cough reflex: From the irritated respiratory mucous membrane, as, for example, of the larynx, trachea or bronchi, the disturbance is propagated along the afferent fibers of the vagus, through the nucleus of the tractus solitarius and the descending fibers arising in it to the spinal primary motor neurons that innervate the diaphragm and the intercostal and abdominal muscles. (Herrick, Cajal.)

by means of which it might purge itself of these. This mechanism is the cough reflex. When the integrity of the reflex arc is broken by destruction of the anterior horn cells, coughing is impossible. Mucus slowly accumulates in the bronchioles and sets up numerous atelectatic areas. Finally, the mucus fills up the entire bronchial tree and suffocates the patient. This primarily was the cause of death in the three cases described (fig. 2).

INDICATIONS FOR REMOVING PATIENTS FROM THE RESPIRATOR

Patients having been placed in the respirator remain in it undisturbed except for rotation from side to side several times daily. Whatever attention and nursing care they require are given to them through the portholes. On the next and subsequent mornings, while getting their morning care, they are observed for ability to use their respiratory muscles. As soon as they are able to do so, they are gradually weaned from the respirator in the following manner: they are removed for one hour the first day, two hours the second day and three hours the third day, until on the eighth day they are able to stay out of the respirator for eight hours or more without apparent discomfort. These patients are then asked to cough. If they can cough they are removed from the respirator and watched carefully for cyanosis, excessive perspiration and somnolence; and in the absence of these signs they are sent to the convalescent wards. However, when they are able to breathe without effort but cannot cough, they remain in the respirator sixteen out of every twenty-four hours until such time as they are able to cough.

Improvement in muscle tonus and vital capacity is determined regularly by asking the patient to count, starting with one, two, three, until the expiratory phase of the respiratory cycle ends and the inspiratory phase begins, without using the accessory muscles of respiration. The last number counted is then noted and, as the vital capacity increases and the muscle tonus improves, the patients are able to count more numbers during the expiratory phase. By means of this simple procedure one observes that the vital capacity reaches its maximum long before the patients are able to cough.

SUMMARY AND CONCLUSIONS

1. Any case of poliomyelitis with or without a rise in temperature may develop respiratory muscle paralysis within twenty-four hours.

2. The most important indication for placing a patient in the respirator is a diminished vital capacity, which can easily be determined by the counting test, and as soon as this indication becomes apparent there is nothing to be gained by waiting for a fully established picture of respiratory muscle paralysis.

3. Ten centimeters of negative water pressure in the respirator is sufficient to start with in cases of children under 10 years of age, and the respiratory rate of the machine should correspond to the normal respiratory rate of the patient.

4. The effect of the respirator in cases of respiratory muscle paralysis is an immediate and miraculous improvement, but prognosis should be withheld for at least five days in spite of the apparent improvement.

5. The ability to breathe freely and without effort is not an indication for removing a patient from the respirator. The only indication is the ability to cough.

6. Patients removed from the respirator without being able to cough may later develop atelectasis with bronchopneumonia.

5. Coryllos, P. N., and Birnbaum, G. L.: Lobar Pneumonia Considered as Pneumococcic Lobar Atelectasis of the Lung: Bronchoscopic Investigation, Arch. Surg. **18**: 190 (Jan.) 1929.

6. Henderson, Yandell: Reasons for the Use of Carbon Dioxide with Oxygen in the Treatment of Pneumonia, New England J. Med. **206**: 151 (Jan. 28), 1931.

Experimental Nephritis Produced by Radium.—Chronic and renal insufficiency without hypertension has been consistently produced in dogs by intravenous injection of the active deposit of radium emanation. The length of life varied inversely with the dosage of radium. The kidneys were the only organs showing pathologic or functional change. This apparent selective action is probably due to the excretion of the active deposit of radium by the kidneys, resulting in a greater concentration of radioactivity in these organs. The kidneys were uniformly small and contracted, showing glomerular, tubular, interstitial and vascular changes comparable in some respects to what occurs in man in chronic hypertensive nephritis. No hypertension was produced, however. The earliest detectable change occurred thirty days after the initial dose. . . .—Adams, Egloff and O'Hare: Experimental Chronic Nephritis Produced by Radium, *Arch. Path.* **15**:465 (April) 1933.

THE SPECIFIC EFFECT OF "FOUADIN" (FUADIN) ON GRANULOMA INGUINALE

PRELIMINARY REPORT

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In 1931, one of us (T. V. W.) reported a case of bilharziasis [1] in which attention was called to the fact that a new trivalent compound of antimony and sodium, called "Fouadin," was replacing antimony and potassium tartrate in Egypt as a safer, more easily administered, and more quickly acting specific in this fluke infestation. Fouadin is named in honor of King Fouad of Egypt by reason of his enthusiastic support during its developmental stage.

There is very little news value to Americans in a story of the use of Fouadin in the infestation known as bilharziasis, or schistosomiasis, because that condition is so rare in this country. This is not true in Egypt, however, as no less than 400,000 cases of this grave, mutilating and distressing parasitic invasion were treated in the anthelmintic hospitals of the Egyptian government during the year 1928 alone. It is so well known that the intravenous administration of large doses of antimony and potassium tartrate is often accompanied by disconcerting systemic reactions, besides being difficult to administer, that one instantly appreciates the fact that the advent of a drug which obviates most of these difficulties is an event of supreme importance in the country of the Nile.

The coming of Fouadin in all probability may prove to be of great importance not only in Egypt but throughout the world, by reason of its specific effect on granuloma inguinale. Granuloma inguinale is by no means rare in the United States—indeed, it is endemic here—while it is quite common in the tropics.

There are no easily available figures that show definitely the rate of occurrence of this disease anywhere. Howard Fox [2] says that it is much more prevalent in the United States than is generally supposed. He quotes Gage [3] as saying that the reported cases do not give a fair idea of its incidence in our country. We concur heartily in this statement. Johns and Gage [4] state that "a rough estimate of the total number of cases under treatment in the various hospitals and clinics in New Orleans would run into the hundreds." In Norfolk, our attention is being called frequently to new cases. In Dutch New Guinea, from 12 to 35 per cent of the population has been found to be infected.[5] The disease is also attracting much attention in many parts of the Orient. These statistics are sketchy and unsatisfactory, but they demonstrate conclusively that granuloma inguinale is not rare. Although it may not be alarmingly prevalent, it is grossly incapacitating when it does strike.

It must be recalled that up to the present day antimony and potassium tartrate has proved to be more universally beneficial in the treatment of granuloma inguinale than all other forms of medication. Andrews [6] says of it: "This form of treatment is thought by some to be specific, but in other hands it has proved disappointing."

While we do not mean to state that antimony and potassium tartrate is specific, yet we venture to assert that it has not always been given the fullest opportunity to prove its specificity in this tropical ulceration. The reasons for this are obvious. At times, as much as 175 grains (11 Gm.) of antimony and potassium tartrate must be administered to get maximum improvement. Ten cubic centimeters of a 1 per cent solution is injected intravenously at each sitting. There are approximately 2 grains (0.13 Gm.) of the drug in each 10 cc. of the 1 per cent solution. Thus, in the neighborhood of eighty injections may be called for in an individual case. Bearing in mind the frequent unpleasant systemic reactions from intravenous antimony and potassium tartrate, and, basing our reasoning on the supposition that from fifty to eighty-five injections may be required, we ask ourselves: What, if the patient is permitted the choice in the matter, is the real likelihood that the drug has always had a fair trial to prove its ultimate potency? One should not lose track of the mental status of most of the patients who ordinarily need treatment for this curse. Treatment must be given twice each week in a continuous series, or, according to Manson, the pathologic condition begins to spread again. An uninterrupted treatment period of from twenty-five to forty-two weeks is thus necessitated. Certainly, a less drastic and a shorter method of treatment would be acceptable.

Before Fouadin was introduced, antimony and potassium tartrate, therefore, was the most brilliant suppressor of both granuloma inguinale and bilharziasis.

The preliminary report of the experiment with Fouadin in bilharziasis by Professor Khalil, parasitologist of the University of Cairo, was to the effect that this new antimony compound could be injected into the muscles without deleterious local results, that depressing systemic reactions were neglible, and that the time required to obtain a cure was almost cut in half. A rough calculation reveals that this time saving is an immense advantage to the Egyptian government as it lops off some six million treatment days yearly. This estimate is based on the 400,000 cases treated in 1928. Antimony and potassium tartrate cures the disease in an average of forty days; Fouadin will produce the same results in twenty-eight days. Thus the many striking advantages of Fouadin over intravenous, more highly toxic antimony and potassium tartrate are apparent.

In the report of the cases of bilharziasis in 1931, the second case treated and reported by the author [7] of that article, it was suggested that Fouadin might be as much superior in the treatment of granuloma inguinale as it seemed to be in that of bilharziasis. Certainly, a drug that could be injected into the muscles

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Read before Norfolk County Medical Society, Oct. 17, 1932.

The name accepted by the Council on Pharmacy and Chemistry is spelled "Fuadin."

1. Williamson, T. V.: The Report of Two Cases of Bilharziasis or Schistosomiasis, Virginia M. Monthly **58**: 449 (Oct.) 1931.

2. Fox, Howard: Granuloma Inguinale: Its Occurrence in the United States, J. A. M. A. **87**: 1785 (Nov. 27) 1926.

3. Gage, I. M.: Granuloma Inguinale, Arch. Dermat. & Syph. **7**: 303 (March) 1923.

4. Johns, F. M., and Gage, I. M.: Some Observations on Granuloma Inguinale and Cultural Studies of the Donovan Bodies, Internat. Clin. **4**: 15 (Dec.) 1924.

5. de Vogel, W.: The Struggle Against Venereal Granuloma Among the Marindinois in Dutch New Guinea, Bull. de l'Office internat. d'hyg. pub. **19**: 1137 (Aug.) 1927.

6. Andrews, G. C.: Diseases of the Skin, Philadelphia, W. B. Saunders Company, 1930, p. 1038.

7. Williamson, T. V., and Townsend, M. E.: Vesicle Bilharziasis, J. Urol. **12**: 175 (Aug.) 1924. Williamson.[1]

would be better than one that had to be introduced into the veins.

Shortly after the report had been published, the Winthrop Chemical Company of New York communicated with the author and informed him that the firm was the American representative of the continental makers of Fouadin. The Winthrop people expressed great interest in the suggestion of experimental work on granuloma inguinale with Fouadin and offered to import a sufficient quantity without cost for that purpose. This was done, and the experiment was begun in Norfolk, early in 1932.

The originator of the experiment (T. V. W.) whose work is confined exclusively to urogenitology, soon realized that the assistance of trained dermatologists was essential in order to obtain the most finished results. From that time on Drs. Anderson and Kimbrough have been actively identified with the work. On observing the rapid and brilliant curative influence of Fouadin in the first few cases, the author became quickly convinced that a boon for granulomatous humanity had been stumbled on, and that the kindly thing to do was to secure data on enough cases to warrant an early broadcast of the method of medication. Thus, Dr. Dodson happily was enlisted in the venture.

DESCRIPTION OF FOUADIN

The following excerpts are taken from the report of Prof. M. Khalil.[8]

Since 1924, the Bilharzia Research Section of the Public Health Department of Egypt with the cooperation of the research department of the Beyer firm has endeavored to

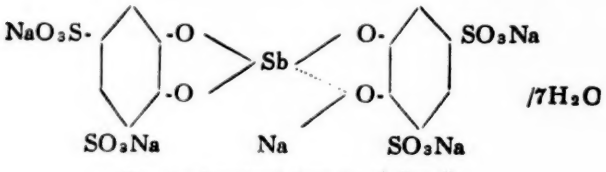

Fig. 1.—Structural formula of Fouadin.

replace antimony and potassium tartrate with less toxic preparations such as Sb 211 and Sb 212 and Prof. H. Schmidt of Elberfeld has produced many preparations which were tested or modified in some cases according to experience in Egypt. Among these compounds were Stibosan, 693 b, now Neo-Stibosan, Antimosan, Antimosan new, Antimosan new II, and Sdt. 91, which has been named in Egypt "Fouadin."

The formula of Fouadin (antimony-III-pyrocatechin-sodium disulphonate), according to Professor Schmidt, is given in figure 1.

This preparation is used in a 7 per cent solution, in which condition it is stable and has been used after a lapse of six months in the Egyptian summer without deterioration. It is a trivalent antimony compound and is far more effective for bilharzia than the pentavalent compound of antimony. The latter is more effective in the treatment of kala-azar.

Dosage.—After a series of animal experiments to determine the minimum lethal dose and its effects on the tissues at the site of the intramuscular injections it was used in man in increasing doses, the patient being kept under strict observation. As a result of treating 150 cases, the course of treatment shown in table 1 was adopted for adults.

The dose is determined for children according to their weight and not their age. Sixty kilograms of body weight is taken as the average adult weight in the scheme as shown in table 1.

The injections are given intramuscularly, preferably in the gluteal region in the two sides alternately. The drug is very easily absorbed, as shown by roentgenograms of the site of injection, the shadow produced by the solution disappearing in nine minutes.

Observations During the Course of Treatment.—No immediate effects are shown, contrary to what occurred sometimes in the case of antimony and potassium tartrate, in which coughing, vomiting and fainting are noticed in a certain number of cases. During the later injections, vomiting has been recorded in a few cases, especially in patients who continued to do their ordinary work after the injections. Slowing of the pulse, 10 beats per minute, occurs in a fairly large percentage of cases. Dr. M. Hammouda of the department of physiology, Faculty of Medicine, Cairo, and Dr. Weese of Elberfeld injected the drug in very large doses into animals used for experimental work and noticed that the drug is quite safe and does not affect the vagus.

TABLE 1.—*Course of Treatment Adopted for Adults*

Day	Dose	Fouadin, 7 per Cent Solution, Cc.
First	First	1.5
Second	Second	3.5
Third	Third	5.0
Fifth	Fourth	5.0
Seventh	Fifth	5.0
Ninth	Sixth	5.0
Eleventh	Seventh	5.0
Thirteenth	Eighth	5.0
Fifteenth	Ninth	5.0
Total		40.0

The antimony is mainly excreted by the kidneys and to a very small extent by the intestinal tract and none by the skin. The daily excretion of antimony during the whole course was determined by Dr. Ali Hassan of the public health department of the Egyptian government, biochemical research department.

A comparison of Fouadin with antimony and potassium tartrate is made in table 2. In view of the facts brought out, it is evident that Fouadin is preferable to antimony and potassium tartrate.

REPORT OF CASES OF GRANULOMA INGUINALE TREATED WITH FOUADIN

CASE 1.—*History.*—A Negress, aged 25, who had had a genital ulceration dating back to 1925, complained of vaginal ulceration which gave off a profuse, foul, constant discharge, and of painful incontinence of urine. The onset of the trouble was characterized by a small, itching ulcer on the vulva. This spread slowly and later caused such fibrous tumefaction of the labia that a vulvectomy was done for relief. Still later, the urinary function became involved to such an extent that the patient had had no control for several years. There was also a constant pain in and around the bladder outlet. The patient had had a lengthy course of treatment with neoarsphenamine and antimony and potassium tartrate before coming to us, but no form of treatment had ever had a great effect on the ulceration.

TABLE 2.—*Comparison of Fouadin with Antimony and Potassium Tartrate*

	Antimony and Potassium Tartrate	Fouadin
Administration	Intravenous	Intramuscular
Local reaction	Inflammation, abscess or sloughing may occur	Slight or no pain
Immediate general reaction	Coughing, vomiting and fainting frequent	None
Late effect	Fever, continuous vomiting, jaundice and sudden death	In the present series vomiting only in 2.5 per cent of cases
Length of course	Four weeks	Two weeks
Expense	Very cheap	Comparatively dear
Maximum dose	2 cc. maximum (44 mg. Sb)	5 cc. maximum (42.5 mg. Sb)

8. Khalil, M.; Nazmi, M.; Peter, F. M.; Salah el Din, M., and el Belash, M. H.: The Treatment of Schistosomiasis with Intramuscular Injection of "Fouadin," Deutsche med. Wchnschr. **55**: 1125 (July) 1929.

Examination.—The patient was emaciated. She had a hunted, tearful expression. This was noticed in the majority of the patients treated in this series. The Wassermann reaction was negative. There were irregular areas of granulomatous ulceration in the vagina, extending as far up as the cervix and encircling the urethral outlet. Profuse, fetid discharges soaked the vulval pads, and there was the odor of uncontrolled urine.

Treatment and Result.—After the third injection of Fouadin, the patient complained much less of bladder pain. Following the fifth treatment, she was able to walk 1 mile to the office and maintain control of the urine. At the end of the first course of treatment, given according to the schedule of dosage of Professor Khalil which has been previously outlined, all ulceration had disappeared, the pain was gone, and there was fair control of urine. The appetite was good, sleep was normal for the first time in years, and the patient was gaining rapidly in weight.

The granuloma was cured.

Figure 2 shows the cured condition. No picture was taken at the beginning of treatment because it was not thought that a good plate could be obtained. This error was not made in any of the subsequent cases; the lesions were found to photograph well. It may be noticed easily that the vaginal mucous membrane is lacking in pigment. This cicatricial bleaching is found in most of the lesions that have been healed with Fouadin. This healing was very rapid in every case. The associated dermatologists (J. W. A. and R. K.) are inclined to believe that this bleaching, or, what is more correct, this lack of pigment, owing to the rapidity of the healing, may be permanent.

Fig. 2 (case 1).—Condition after treatment with Fouadin.

CASE 2.—*History.*—A Negress, aged 25, reported to us with a large perianal granuloma which had been in existence for four years. Treatment with neoarsphenamine and antimony and potassium tartrate had been given with very little result. The patient complained most of a foul smelling discharge of great amount, and of terrific nocturnal pain. This type of nocturnal pain was a symptom of many of the other cases in the series. Andrews [9] states that granuloma inguinale is painless. We do not agree with him. Some of our patients complained bitterly of pain which, for the most part, simulated that of syphilis, in that it was most marked at night. This pain is very resistant to anodynal authority, even morphine having but partial effect on it. Nor does the phenomenon of mixed infection in the ulceration explain the symptom as satisfactorily as might be desired; there is probably some disturbance in the nerve supply involved. We found that a combination of 3 grains (0.2 Gm.) of sodium amytal with a grain each (0.065 Gm.) of codeine sulphate and extract of hyoscyamus was the most effective pain killer of the non-narcotic types of drugs. The Wassermann reaction was negative. We do not feel that the Wassermann test is of great importance in the diagnosis of granuloma inguinale, as a positive response does not rule out the disease in favor of syphilis. However, we do feel that it is of great value in the subsequent check up of the patient when the granulomatous ulceration is cleared up. The question of whether the patient may have both syphilis and granuloma at one time is of considerable moment and interest.

9. Andrews, G. C.: Disease of the Skin, p. 1036.

This patient also complained of loss of appetite. This was a fairly constant observation in our cases. Loss of weight is not a constant finding, as we have seen obese persons with granuloma.

Examination.—There was an enormous infected papillomatous growth extending entirely round the anus. The circumference of this neoplastic mass was irregularly oval, its radius from the anal center being 3 inches. It was elevated above the skin level throughout. Figure 3 *A* depicts it clearly.

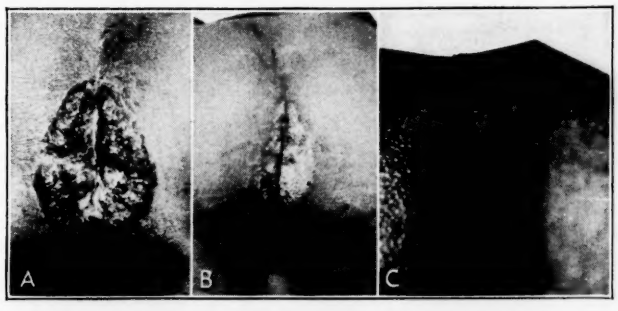

Fig. 3 (case 2).—Condition: *A*, before treatment; *B*, after ten days of routine treatment; *C*, after ten treatments in twenty-six days.

Treatment and Result.—Routine treatment every two days with Fouadin brought about the improvement shown in figure 3 *B* in ten days. The discharge ceased after the third injection; the mass assumed a dead look and began to dry up. Following the fourth treatment there was no more pain. There was no trace of the ulcerated growth at the conclusion of the first course of Fouadin. The patient was cured in twenty-six days with ten treatments. Figure 3 *C* shows the astonishingly perfect results.

CASE 3.—*History.*—An emaciated Negress, aged 23, had an extensive ulceration of the left groin, vulva, vagina and perineum. This condition had started twenty-two months before as a pimple in the groin and spread slowly to its present dimensions. The symptoms she stressed were pain, which was worse at night, large quantities of ropy, fetid discharge, and loss of appetite. From the scanty information obtained by questioning her, it seemed that she had had treatment with both antimony and potassium tartrate and arsphenamine.

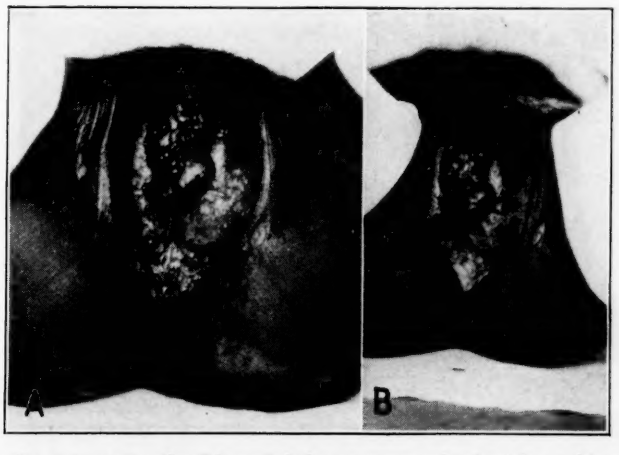

Fig. 4 (case 3).—Condition: *A*, before treatment, showing tabs resulting from the undermining of the labia and also the streams of secretion; *B*, when healed.

Examination.—There was a dirty ulcer in the left groin 3 inches (7.6 cm.) in length and 2 inches (5 cm.) in width. The labia, vagina and perineum presented generalized granular ulceration. The labia were so enlarged and thickened that they seemed to be the seat of elephantiasis. As the result of degenerative undermining of the labia there were several large tabs which gave the impression of pedunculated tumors. Figure 4 *A* shows these tabs well. It also registers the streams of fetid secretion running from the lesions.

Treatment and Result.—The response to treatment was very rapid. Dry crusts formed over the lesions in ten days. The removal of these crusts revealed healthy tissue beneath which possessed the hilly aspect of granulation tissue but which was covered with a definite integument. There was no black pigment in this healed area, nor has any appeared to date. There

Fig. 5 (case 4).—Before treatment.

seemed to be a total lack of the formation of fibrous tissue, which seems to be a frequent sequela in the slow healing of granuloma inguinale with other forms of treatment. No tendency to fibrous contraction was observed in the rehabilitated tract.

Figure 4 *B* tells the story of the healing. The bleached area in the left groin may be noted. The hypertrophied vulval tabs

Fig. 6 (case 4).—Healing effected by treatment.

remain, although they are somewhat shrunken; they will be removed with the knife later.

The patient was cured in thirty days with twelve injections of Fouadin.

Special Note.—This patient, together with patients 4 and 5, complained of a reaction of which no mention was made by Professor Khalil. Beginning some ten hours after certain of the injections, there was generalized, subacute joint pain, which would persist for about fifteen hours and then subside slowly. This pain, while it was moderately severe, was never bad enough to warrant the discontinuance of treatment. When it annoyed the patient, a three day interval was allowed between the injections instead of the routine forty-eight hours.

CASE 4.—*History.*—A Negro, aged 22, had a groin and penile ulceration which had been in evidence for several years. It began as a small hard spot in the left groin and gradually spread until the greater part of the groin, penis and scrotum became involved. He was treated with antimony and potassium tartrate and with arsphenamine. The antimony and potassium tartrate healed most of the ulceration, but there always remained isolated areas that would not respond entirely. As soon as the administration of the drug was discontinued, a slow recrudescence set in. For the past six weeks the ulcerated region had been very painful.

Examination.—The left groin, the left side of the scrotum and the penis in the region of the foreskin presented a number of small ulcerated areas of varying size and shape. The ulceration was shallow, was covered with dirty granules, and gave off a profuse discharge of rank odor. There was much thick fibrous tissue in the left groin which had contracted to a marked degree. The prepuce was also much enlarged by fibrous tissue. This preputial tumefaction was not lessened by treat-

Fig. 7 (case 5).—Ulceration before treatment, with streams of discharge.

ment with Fouadin but will be removed by cosmetic surgery later. The whole condition is depicted in figure 5.

Treatment and Result.—Twelve injections of Fouadin over a period of thirty days brought about the total healing portrayed in figure 6. As the patient complained more of the joint pain reactions than any of the others, the course of injections was spread out over a longer period than usual in order to permit the disappearance of all such symptoms between injections. A total cure resulted.

CASE 5.—*History.*—A married Negress, aged 24, the mother of three small children, had been afflicted with a foul smelling, painful, extensive ulceration in the groins and perineum which had persisted for several years. The Wassermann reaction was negative. She told of having had two kinds of intravenous injections, at several times during the history of the disease, which we inferred to have been antimony and potassium tartrate and arsphenamine. Either the treatment was ineffective, or the patient was an inconsistent and irregular one. There was profuse discharge (shown well in figure 7), nocturnal pain, emaciation and loss of appetite.

Examination.—An enormous ulceration involved both groins, the vulva and the perineum. It had invaded the vagina and it extended backward beyond the anus. The entire area was

badly infected, and there were several large blebs filled tightly with glairish, sticky fluid. The whole pathologic condition was most repulsive. Figure 7 is more expressive than words.

Treatment and Result.—A course of twelve injections of Fouadin over a period of thirty days produced the results pictured in figure 8. The lack of pigmentation may be clearly seen. There was no fibrous formation. The healed surface is smooth. Absolute cure resulted.

CASE 6.—*History.*—A young Negress of undetermined age presented herself with the following history: The time of onset was somewhat uncertain, but the condition had been in existence for at least a year. A pimple appeared on the upper portion of the right leg, it itched and was scratched, following which it spread with a fair degree of rapidity and continued to itch intensely. She went to a medical college clinic in the fall of 1931 and was given five injections of arsphenamine. The last treatment was in October, 1931.

Examination.—The same general characteristics that have been noted in the foregoing cases were a part of this infection. The size of the lesions at the beginning of treatment with Fouadin, June 22, 1932, was: of the vulva, perineum and anus: anteroposterior, 16 cm.; lateral, 7.5 cm.; at the upper margin of the inner surface of the right leg: length, 7 cm.; breadth, 2.5 cm.

Figure 9 obviates the necessity for further description.

Fig. 8 (case 5).—Healing, without scars.

Treatment and Result.—After the third injection of Fouadin (5 cc.) the secretion from the granuloma had almost ceased and a scab began forming, which came off before the fifth injection. Another formed, which later came off. July 4, an injection caused diarrhea, and this occurred at four consecutive treatments. July 10, injections began causing headaches, nausea and vomiting, which was treated at each occurrence with the administration of camphorated tincture of opium in 2 drachm (7.5 cc.) doses. After that, Dr. Dodson followed the Fouadin with injections of 1 cc. of 1:1,000 solution of epinephrine hydrochloride. He also gave 2 drachms (7.5 cc.) of camphorated tincture of opium before the reactions set in.

The picture that is reproduced in figure 10, of the healed lesions, was taken, August 2, forty-one days after the beginning of treatment. The same bleaching, or lack of skin pigmentation, is again noticed. This characteristic was noticed in all the cases except case 2.

Treatment with Fouadin from June 22 to Aug. 1, 1932, brought about a complete cure.

CASE 7.—*History.*—A Negro, aged 36, complained of a chronic, painful, penile ulcer. The onset, six months before, was characterized by an itching pimple on the shaft of the penis near the pubic hairs. The discharge was foul smelling and profuse. During the last six weeks the ulcer had become very painful. The pain was worse at night. The patient had had "shots" for syphilis during the life of the ulcer, but no local treatment had been effective.

Fig. 9 (case 6).—Before treatment.

Examination.—On the shaft of the penis, near the right penoscrotal junction, there was an irregular, dirty, granulating ulcer, 1½ inches (3.7 cm.) wide and 2 inches (5 cm.) long. It gave off a foul odor and a quantity of discharge. Figure 11 *A* shows it well.

Fig. 10 (case 6).—Result after forty-one days of treatment.

Treatment and Result.—The response of this ulceration was slow at first. Three injections brought but little change in it. However, after the fifth injection, the healing was rapid and complete; with the exception of slight depigmentation, it was

difficult to locate the site of the former condition. A total cure resulted with ten injections of Fouadin. The pain disappeared after the fourth injection. There has been no recurrence in this or in any other case to date (fig. 11 *B*).

COMMENT

We treated seven other cases in this series of experiments, but, since our picture data are not yet complete, we will not present them in detail in this already lengthy report. Suffice it to say that in no case has the treatment failed, the final result in all tallying closely with the cases reported in detail.

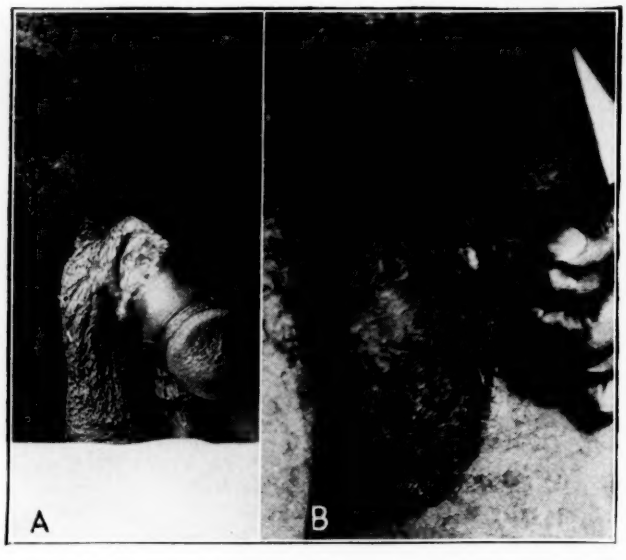

Fig. 11 (case 7).—Condition: *A*, before treatment; *B*, after treatment.

CONCLUSIONS

1. In treating fourteen cases of granuloma inguinale with Fouadin, we failed to notice any reaction that could be called dangerous or which revealed contraindications to its routine use in this affliction.

2. Fouadin seems to be generally superior to antimony and potassium tartrate in the treatment of this tropical ulceration.

3. Judging from our observations in this limited number of cases, we are unanimously agreed that Fouadin is a safe and rapid specific for granuloma inguinale.

EXPLANATORY NOTE

No apology is offered for presenting this preliminary report, based on the very evident paucity of clinical material, for the simple reason that we have been so favorably impressed with the behavior of Fouadin that we are not willing to keep the medical world longer in ignorance of this boon to granulomatous humanity. The desire to better the sad lot of these unfortunate ones urges haste.

It is our desire to publish an extensive report of this form of treatment later. In order that the profession may obtain a better knowledge of the amount of granuloma inguinale in the United States—or indeed, for that matter, in the world—and so that it may soon be informed of the results of extensive treatment with Fouadin, may we request all physicians both in our country and elsewhere to report their cases to Thomas V. Williamson, M.D., Suite 818, Medical Arts Building, Norfolk, Va., as soon as may be.

THE IMPORTANCE OF TUBERCULOSIS IN NATIONAL DEFENSE

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Lieutenant-Colonel, Medical Corps Reserve, U. S. Army
ST. PAUL

Tuberculosis cost the United States government more than $46,000,000 in 1932 for service connected compensation alone. This is only part of the bill paid annually for tuberculosis. The cost for hospitalization for tuberculosis multiplies this bill by many thousands of dollars. From 1924 to 1932 there were 61,330 veterans hospitalized for tuberculosis, occupying a sufficient number of beds to quarter two and one-fourth army divisions. In this age of pensions and the tendency to government health services, every known scientific medical procedure should be utilized to reduce the burden to the taxpayer.

Knowledge of the early diagnosis of tuberculosis has changed greatly during the past few years through the increasing efficiency of x-ray apparatus and the more practical application of the tuberculin test. The veterinarian prevents the spread of tuberculosis in herds of cattle by using the tuberculin test. It is possible to obtain approximately the same result in the human being by making use of the new medical scientific procedures. Just as typhoid has been brought under control by epidemiologic supervision, so tuberculosis may be finally conquered.

There have been several noteworthy surveys utilizing this procedure, particularly in the Lymanhurst school in Minneapolis, the University of Minnesota, Massachusetts with the ten year program, North Carolina, the University of Pennsylvania, New York City and Detroit. Results of these surveys show conclusively that it is possible to discover tuberculosis early; in fact, so early as to precede the appearance of clinical symptoms of any kind. More than 80 per cent of the tuberculosis discovered today is moderately advanced or advanced tuberculosis. With the modern intracutaneous tuberculosis test and roentgen technic, this disease can be detected when there is only a minimal pathologic change.

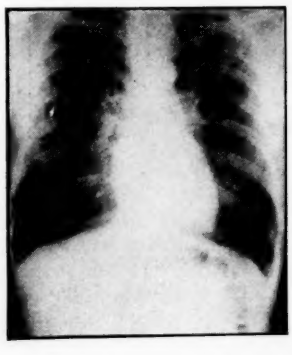

Fig. 1.—Appearance of chest of C. P., a man, aged 24, whose father died of tuberculosis. The tuberculin test was positive on admission to the university. A roentgenogram of the chest, Feb. 16, 1932, showed evidence of the first infection type of tuberculosis with the reinfection type, moderately advanced, involving the left upper lung field.

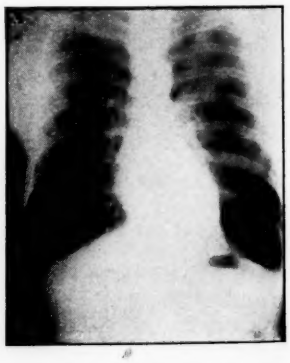

Fig. 2.—Same chest as in figure 1, April 15, 1932, showing partial collapse of left lung by artificial pneumothorax. The patient has remained ambulatory and his general health has been excellent until the present, March, 1933.

Abstract from a thesis submitted by the author for promotion to Colonel of the Medical Corps Reserve.

The national defense forces and other government agencies are ideal groups of which to make such a survey on a large scale. The army, the navy and the national guard could incorporate into their enlistment examinations this early diagnostic procedure. Civilian groups could be tested in the R. O. T. C., the C. M. T. C. and the reserve officers camps. The coast guard, post office department and other departments could also carry out this investigation. Not only could the tuberculin test and the roentgenogram be incorporated in the physical examination at enlistment, but also an annual examination could be given to the troops to determine the possibility of infection while in the service.

Fig. 3.—Appearance of B. W. during football season in 1931.

The advisability of introducing this early diagnosis of tuberculosis into the army is manifest in the annual report of the surgeon general of the army for 1932, in which he states that tuberculosis hospitalization alone costs more than $500,000 annually.

The sum of $400,090,176 is the total amount paid out in compensation to World War veterans for tuberculosis from 1923 to 1932. This is 33⅓ per cent of the total amount paid in compensation, and it does not include hospitalization. In 1932, $46,313,184 was paid for compensation and active disability awards for tuberculosis. That is 26 per cent of the total for 1932 paid for all disabilities. Seven hundred and eighty-two emergency officers, retired for tuberculosis, were paid $1,238,316 in 1932.

The splendid record for hygiene and sanitation of the American army during the World War is well known to all. The high standards set in 1917 encourage one to believe that tuberculosis control in the next great emergency will be comparable with that of the control of typhoid in 1917.

It is apparent that bankruptcy, or a period of stagnation, similar to what the states of the Confederacy went through after the Civil War and from which some are still suffering, has been threatening the United States. Tuberculosis plays a big part in the postwar bill, and every possible known agency that would in any way curtail this expense should be thoroughly investigated.

MODERN EARLY DIAGNOSIS OF TUBERCULOSIS

Only yesterday the diagnosis of tuberculosis required a positive sputum test, guinea-pig inoculation, or history to confirm it. Today I see many unsuspected cases of tuberculosis in apparently healthy individuals discovered through the tuberculin test and roentgenograms. Some of these were discovered extremely early; in fact, so early that, with the administration of pneumothorax, the patients were able to go about their daily duties without loss of time or expense to the community. Previously these cases would have gone on to moderately advanced or advanced tuberculosis and would have required several years of sanatorium treatment. The case reported here is one of the early ambulatory types.

I have seen several young men and women at the University of Minnesota under ambulatory treatment for tuberculosis. Then, again, I have seen the robust individual with no symptoms but with extensive destruction, as the case of the football player presented here demonstrates. Discovery of this type of case can be made only by a routine tuberculin test and roentgen examination of the positive reactors. This type of tuberculous patient was undoubtedly drafted in large numbers into our national defense forces during the World War and today is placing a tremendous tax burden on the country. The case of B. W., who was considered robust, is one of this type.

B. W., a youth, aged 20 (fig. 3), in the football season of 1931 was the crack blocking halfback for a champion college football team. At the end of the season he went in for basketball.

Early in December, he noticed that he was becoming more easily fatigued. On the advice of the coach he went to see a physician, who took a roentgenogram of his chest (fig. 4).

In December, 1932, the sanatorium physician said that the disease had progressed; there had been a hemorrhage, and the young man's condition was serious.

There are apparently many young men with progressive tuberculosis who seem to be in perfect physical condition. If this young man had applied for military service in September, 1931, what chance would there have been of discovering his pathologic condition without the use of the tuberculin test and the roentgen examination?

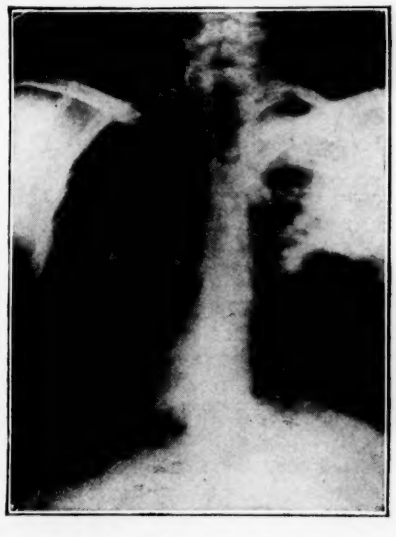

Fig. 4 (B. W.).—Pulmonary tuberculosis of the adult and destructive type, involving approximately the upper half of the right lung. In the left lung hilus are some rather dense and irregular shadows which are believed to be due to calcium deposits representing the first infection, or childhood type, of tuberculosis. A slight shadow in the left first interspace near the periphery suggests a tuberculous lesion.

THE INCIDENCE OF TUBERCULOSIS

The incidence of tuberculosis varies greatly. From a national standpoint, in 1925, Japan had 213 deaths per hundred thousand and France had 206. At the other extreme were the United States with 98 and New Zealand with 62. The death rate in the United States has decreased from 1900, when it was 202, to 1931, when it was 68.2. Among the states, a great variation ranges from Arizona with 291.2 and California with 90.8 to New York with 67.6 and Utah with 22.5.

Gorgas, in 1914, in his report on sanitation concerning employees on the mines on the Rand, recommended as a most important single measure "scattering."

Under normal conditions, states that are thinly populated have the lowest mortality. Contact is still the all important factor in tuberculosis.

In Minnesota it has been found that school children, from the grades to high school, vary anywhere from 2.5 per cent positive reactors to as high as 80 per cent. There is one high school in a small town in Minnesota that had 100 per cent negative reactors. The lower percentages were in the rural districts. High schools of the large cities average about 28 per cent. In Philadelphia, one school had 72.6 per cent positive reactors and another school in the same city had 90.2 per cent. The freshmen in the universities vary, with 16 per cent positive reactors in Iowa, 33 per cent in Minnesota, 50 per cent at Leland Stanford and 59 per cent at Yale. The incidence of tuberculosis depends on environmental conditions.

CONCLUSIONS

1. There is a tuberculosis problem in national defense.

2. The utilization of the intracutaneous tuberculin test and the x-rays will screen out most of the infected individuals. The new rapid, portable and inexpensive roentgen procedure used in New York City, which is made by the Powers Reproduction Corporation, seems to be operating satisfactorily. More than 150 exposures can be made with ease in an hour. Paper film is used. There is a difference of opinion as to the efficacy of the paper film, but I understand that experiments are being made with a translucent medium.

3. Modern roentgen examinations are practical—as to both time and cost.

4. It is not to the advantage of the individual to have a tuberculous infection.

(*a*) In the average case, a minimal (first, or childhood type) infection will usually resolve and heal with a calcareous deposit and resulting calcareous changes in the glands.

(*b*) The second infection in the average case in which there has been an early first infection, as described, produces localized destruction. This may become chronic with local destruction and possible metastasis to other parts of the body. This is the most common type of tuberculosis encountered in the northern part of the United States.

(*c*) In the acute miliary and septicemic types of tuberculosis, one must remember that resistances are known to depend to a considerable degree on environmental factors susceptible of modification. Among these factors are inadequate or unsuitable food, industrial fatigue, physiologic stress and a low standard of living, all of which play an important part, together with faulty habits, such as alcoholic excess, in lowering resistance.

It is obvious that these factors operate only to precipitate miliary tuberculosis in a "tuberculized" population, since they do not cause tuberculosis but merely activate or aggravate existing lesions (endogenous).

A superinfection on a nonreactor, or in so-called virgin soil, together with accompanying "stress," as a rule does not permit the usual resolution of the first or childhood type of tuberculous infection. It results, instead, in a continuous pathologic condition proceeding without pause from the first into the destructive type. This superinfection causes superdestruction and brings about more rapid and more drastic complications, such as bursting of glandular tissue and emptying contents into the blood stream or bronchi, permitting miliary infections.

(*d*) From this one may deduce that, if one must have a tuberculous infection, it would be best to have the minimal, first or childhood type of infection early so that when and if the second infection should occur the destruction might possibly be more gradual. I believe, however, that it is not necessary for an individual to have tuberculosis, as shown by the following figures: The entering class of the University of Iowa is only 16 per cent infected with the disease, as compared to the university class of Stanford University, California, where it is 50 per cent. Proper segregation of infected individuals (by segregation I mean the patients with early involvement placed in a quiescent or noninfectious condition and those with the more advanced type in the hospital for sanatorium treatment) will remove any inevitable contact with the disease.

(*e*) The veterinarians have shown that tuberculosis can be eliminated in cattle and that the herds are much better off without tuberculosis. Medical research seems to indicate that this is also true in human beings. There is good reason to believe that the rate can be cut to a negligible figure if the principles involved in the veterinarian procedure, i. e., universal testing and segregation of carriers, are applied to man. Army discipline, providing control of the individual, gives to the national defense forces an excellent opportunity to lead the way in the epidemiologic control of tuberculosis in man.

11 West Summit Avenue.

FOCAL ENLARGEMENT OF THE TEMPORAL BONE AS A SIGN OF BRAIN TUMOR

SECOND REPORT

ROSS H. THOMPSON, M.D.
PHILADELPHIA

In a recent report,[1] two cases of bulging of the squamous portion of the temporal bone in young children were described by me which were due to an underlying tumor of the temporal lobe found at operation. One was the result of a meningeal fibroblastoma with cystic formation; the other, of a gliomatous cyst. The latter, by displacement of the midline structures, had produced a milder degree of bulging in the opposite squama. In one case, therefore, the bulging was bilateral; in the other, unilateral.

My object in this report is to record and discuss three instances of bulging of the squamous portion of the temporal bone observed in young adults, aged from 23 to 28, in each of which an underlying tumor was found at operation. In two patients, evidence of organic nervous disorder was present in childhood.

REPORT OF CASES

CASE 1.—*Bulging of the squamous portion of the left temporal bone directly overlying a large left temporal lobe cyst, probably of gliomatous origin.*

History.—A man, aged 28, admitted to the service of Dr. William G. Spiller in the University of Pennsylvania Hospital, Dec. 10, 1932, complained of convulsive seizures over a period of thirteen years. When he was a child, 11 years of age, for no explainable reason, a weakness of the right upper and lower limbs developed rather suddenly. He was able to walk, but the right-sided weakness continued over a period of two years, gradually disappearing completely. During the two years the

Read before the Philadelphia Neurological Society, Feb. 24, 1933.
From the Neurological Department of the University of Pennsylvania School of Medicine, and from the service of Dr. W. J. Gardner of the Cleveland Clinic, Cleveland.

1. Thompson, R. H.: Focal Enlargement of the Temporal Bone as a Sign of Brain Tumor, J. A. M. A. **99**: 379 (July 30) 1932.

right foot dragged, but not enough to give him much annoyance. From the age of 13 to 15 years he was, as far as he knows, symptom free. At the latter age the convulsive seizures began, not accompanied by any weakness or dragging of the right toes. According to his description the attacks were of the grand mal type, frequent and often resulting in injury. There was nothing in their occurrence of localizing value and there were no definite auras. Two convulsions, witnessed by patients, were described as generalized tonic and clonic spasms with unconsciousness.

Examination.—The patient was naturally left-handed, as was indicated by writing, eating, throwing a baseball and other spontaneous movements. He stated, however, that prior to the age of 7 years efforts were made to teach him right-handedness. Since the age of 7 he has used his left hand in preference to the right.

After he walked a distance of ten paces or more, the right foot showed signs of fatigue, the toes momentarily scraping on the floor with each forward movement of the foot. He was unaware of this scraping tendency and stated that he had never known weakness or clumsiness in either foot since the period between 11 and 13 years of age. Both right extremities were found to be weaker than the left, a little more than could be accounted for by the left-handedness, and there was distinct lower right facial weakness. Each of the tendon reflexes on the right side was decidedly more active than the corresponding one on the left. On the right there was a brief ankle clonus, Troemner, Rossolimo and Mendel-Bechterew phenomena, and an absence of abdominal and cremasteric reflexes. Muscular tone and synergy were normal throughout.

The squamous portion of the left temporal bone was prominent, presenting the appearance of being bulged outward. The left temporal artery was tortuous and much more conspicuous than the right.

Ophthalmologic examination showed a complete right homonymous hemianopia with preservation of central vision and a slightly enlarged blind spot in the left eye. The fundi gave no evidence of hemorrhage, exudates or choking of the disks.

Roentgen examination revealed the presence of the prominence of the left squama but no indication of increased intracranial pressure or pathologic condition of the skull. The sella turcica was normal.

Operation (by Dr. Charles H. Frazier).—The bone constituting the left squama was thinner than is usually encountered. A large cyst deep in the temporal lobe was evacuated, more than 75 cc. of fluid being recovered. Exploration and possible removal of the temporal lobe was considered but deemed inadvisable because of the possibility of the presence of some of the speech centers in the left temporal lobe, even though the patient was left-handed. The type of tumor was, therefore, not determined.

Examination of the bone flap by Dr. Bernard J. Alpers revealed no invasion of the tumor cells or any abnormality.

I am indebted to Dr. W. James Gardner of the Cleveland Clinic for the notes of, and permission to report, the following two cases:

CASE 2.—*Bulging of the squamous portion of the left temporal bone directly overlying a large left temporal lobe cyst; less marked bulging of the squamous portion of the right temporal bone.*

History.—A woman, aged 23, presented herself, Aug. 25, 1932, complaining of headache, convulsions and weakness of the right extremities. It was stated that at the age of 3 years the patient had "infantile paralysis," at which time the right arm and leg were completely paralyzed for three months. Almost complete recovery occurred, apparently. However, at the age of 9 years the right limbs again became weak, so much so that she began to use the left hand in writing and had continued to do so since. For the previous two years, the weakness in the right arm and leg had been progressing more rapidly and, for the past year, attacks of dizziness had developed. Eight months before admission she had an attack of unconsciousness accompanied by twitching of the right side of the face and of both right extremities. Since that time she experienced increasing headaches in the frontal and temporal regions. Three weeks and two weeks before admission similar attacks involving the right side were observed, but without loss of consciousness. During the past few months there had occurred occasional attacks of nausea and vomiting.

Examination.—On examination by Dr. Gardner, the patient presented a definite paresis of the right extremities and of the right lower part of the face. There was also a slight impairment of pain and tactile perception over the right side, including the face. The corneal, pharyngeal, palatal and abdominal reflexes were diminished on the right side. The biceps, triceps, patellar and achilles reflexes were exaggerated on the right side, and there was a positive Babinski sign when the right sole was stroked. There was no astereognosis, apraxia or diminution of deep sensation. On account of the pronounced weakness, it was not possible to test for synergy on the right side.

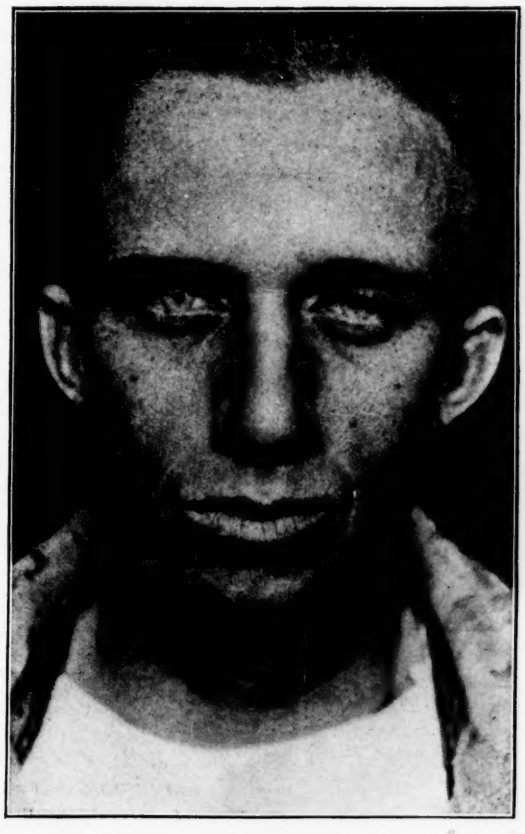

Fig. 1 (case 1).—Bulging of the squamous portion of the left temporal bone directly overlying a large left temporal lobe cyst.

Examination of the skull revealed a swelling of the squamous portion of each temporal bone, particularly marked in the left. The swellings were not tender and were stated by Dr. Gardner to have been more pronounced than figure 2 would lead one to believe. (The photograph was obtained with some difficulty after the patient had been anesthetized with tribrom-ethanol.)

Ophthalmologic examination revealed a low grade edema of both optic disks which was not measurable. Visual acuity was 6/7.5 in the right and 6/6 in the left eye. Visual fields were full, both for form and color. There was no displacement of the globes.

Roentgen examination showed a large calcified tumor in the left temporoparietal region.

Laboratory examination disclosed nothing significant.

Operation (by Dr. W. James Gardner).—A large section of bone was removed from the left temporoparietal region, August 26. In the center of the exposed cortex was a widened, flattened gyrus and a large venous channel. A brain cannula introduced through this gyrus encountered a large quantity of

syrupy, yellow fluid. The cyst, about the size of an orange, extended to the falx, anteriorly beyond the fissure of Rolando, posteriorly to the occipital lobe and downward into the temporal lobe. At several points there were calcifications in the cyst wall. The wall was covered with cholesterol crystals, which imparted to it a silvery appearance not unlike a freshly painted radiator. The gross diagnosis was cholesteatomatous cyst. It appeared likely that a complete removal of the lesion would necessitate considerable cerebral damage, which would

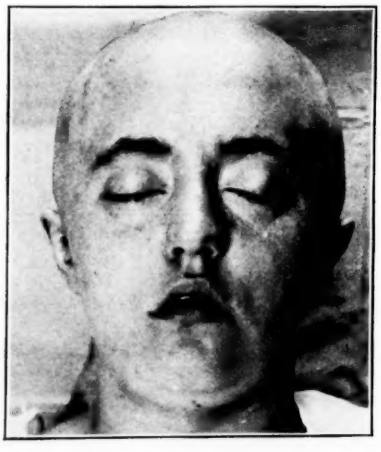

Fig. 2 (case 2).—Bulging of the squamous portion of the left temporal bone directly overlying a left temporal lobe cyst; less marked bulging of the right temporal bone.

result in a permanent hemiparesis and, if the speech center was located in this hemisphere, a serious degree of aphasia. It was decided, therefore, not to attempt a complete removal at the time. Approximately one third of the lining membrane of the cyst was, therefore, removed by blunt dissection, following which the remaining cavity was irrigated by saline solution, the dura closed closely, the section of bone replaced and the wound closed.

Microscopic examination of the bone flap was not made. Aside from the bulging, the macroscopic appearance was in all respects normal.

The pathologic diagnosis was gliomatous cyst.

CASE 3.—*Fulness of the squamous portion of the left temporal bone and enlargement on the left side of the frontal bone, mandible and probably also of the zygoma and maxilla, with a fibroblastoma situated on the left lesser wing of the sphenoid bone.*

History.—A man, aged 23, came to Dr. Gardner at the Cleveland Clinic, July 7, 1932, complaining of headache, dizziness and blurring of vision. He had been perfectly well until April, 1932, when he was injured in a baseball game, striking the right occipital region and being rendered unconscious for about five minutes. His symptoms developed on the following day and continued unchanged.

He had had facial asymmetry, his mother stated, all his life, the left side of the face appearing larger.

Examination.—There was tenderness in the left temporal region and hypertrophy of the bones of the left side of the face (the frontal, zygoma, maxilla and mandible), together with a fulness of the left temporal region. The sense of smell was somewhat impaired on the left side. The right patellar reflex was absent; the left, hypo-active. On questioning, the patient stated that he had some tremor of the right leg after the accident.

Visual acuity was 6/6 in each eye. The fields showed a right-sided notching in the horizontal line, possibly indicative of a partial right homonymous hemianopia. Choking of each disk was present to between 2 and 3 diopters.

Cerebrospinal fluid examination showed that the pressure was 500 mm. of water and the fluid slightly xanthochromic.

Roentgen examination disclosed a line in the right parietal region suggestive of fracture, an indistinct calcification in the left frontal region, and slight erosion of the posterior clinoid processes.

Clinical diagnosis appeared to lie between a subdural hematoma and a left frontal lobe tumor. Dr. Gardner decided to make a bilateral trephinement and, if a subdural hematoma was not encountered, to perform a ventriculogram. As no hematoma was detected, an attempt was made to inject air into the ventricles. As neither ventricle was met, an encephalogram was decided on, although the bone hypertrophy of the left side of the face, the fulness of the left temporal region and a suspicious shadow in the roentgenogram suggested that the lesion was in the left frontotemporal region.

The resulting film disclosed no air within the cranial cavity, excepting a small amount above the corpus callosum, which was displaced to the right, indicating an expanding lesion of the left cerebral hemisphere. The cisterna magna was well outlined, signifying that a cerebellar hernia was not present.

Operation (by Dr. Gardner).—A left frontotemporal craniotomy was performed and the bone found to be very porous and hemorrhagic throughout almost the entire exposure. A meningeal fibroblastoma was discovered arising from the lesser wing of the sphenoid bone on the left side.

The bone immediately overlying the tumor was rather thick, was quite soft and bled freely. Microscopic examination of a

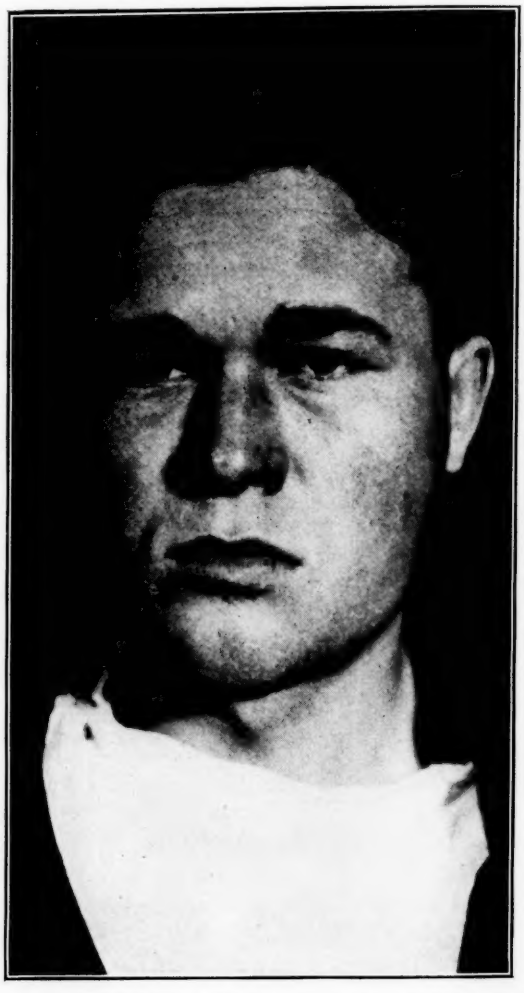

Fig. 3 (case 3).—Fulness of the squamous portion of the left temporal bone and enlargement of the bones of the left side of the face, with a fibroblastoma situated on the left lesser wing of the sphenoid bone.

specimen from the left frontal and one from the left temporal portion of the flap showed cancellous bone, but no tumor cells could be demonstrated.

The specimen consisted of a tumor mass in several fragments, weighing 25 Gm. It was purplish red, soft and spongy in character and extremely friable.

The microscopic diagnosis was fibroblastoma.

Examination of the dura (two specimens taken from the immediate overlying region) showed thickening and the pres-

ence of small nodular projections on the surface, varying in size up to 3 mm. in diameter. Microscopically, one specimen showed masses of tumor cells in a localizing plaque on the surface; the other showed no evidence of tumor cells.

COMMENT

The most important feature to be considered in the presentation of these three cases is the discovery in adult life of bulging of the squamous portion of the temporal bone directly overlying a brain tumor. How long the prominences had been present before discovery is not known, but there is evidence that they probably occurred in childhood. Indeed, if the compensatory dilatation of the skull is to receive a satisfactory explanation commensurate with present knowledge of the normal development of the brain and braincase, it is essential that the onset of the tumors be placed in early life.

In man, the skull is an osseous box, having developed from a membranous and a cartilaginous embryonic state. The sides and the convexity of the vault are originally membranous, and the skull base and the facial skeleton, originally cartilaginous. Later, nests of bone areas or points of ossification appear in both membranous and cartilaginous structures. At the time the development of the cartilaginous base of the skull begins, the brain is already developed and shaped to some extent.

The ideas of the relation of the development of the skull to growth of the brain have within late years undergone change. Not so long ago it was held that microcephalic idiocy was caused by the failure of the skull to expand sufficiently to permit normal cerebral development. Lannelongue's operation of linear craniotomy was devised and performed to overcome the effect of premature suture closure. Spiller,[2] in 1898, carefully considered the advisability of this operation, and his paper contained the views of W. W. Keen from a personal experience covering eighteen cases. It is now generally recognized that growth of the brain is the principal factor that influences suture closure and also the size and shape of the cranium. Dabelow [3] described how the curvature of the brain at the time of the development of the cartilaginous base of the skull was the determining factor for the type of curvature of the base of the skull. He related how the parts of the skull had to adjust themselves to the brain, forming like a cast about it, imitating the conformation of the brain.

Bolk [4] stated that the different bones of the skull cannot unite before the brain has attained its final volume. According to him, the physiologic function of the sutures is to produce new bony tissue along the margins of the skull bones for the sake of the enlarging braincase. Their function, he explained, is continued as long as the braincase needs enlarging; i. e., as long as the brain increases in volume. Schüller [5] stated that the growth of the skull and its final size depended in the first place on the size of its contents. If the brain is backward in its development, the skull is in most cases smaller. On the other hand, he continued, an abnormal enlargement of the skull contents always causes an excessive dilatation of the skull, provided the enlargement of the contents occurs at a time when the skull can still change its size.

Just how long the braincase remains plastic and amenable to enlargement and molding by the development of an abnormal intracranial content, such as an encroaching tumor, is a question. Merkel [6] was of the opinion that the skull enlarges normally under the stimulus of the growth of the brain up to the seventh year. "At puberty," he stated, "the maximum thickness is usually attained and at 20 growth in thickness is completed." He noted, however, that individual variations are common both in bony development and in closure of the sutures. In some, the sutures close early; in others, they remain open for many years beyond the average.

Loeschcke and Weinnoldt [7] cited Thoma to the effect that the marginal appositional growth of the sutures is completed in the third year of life and that after this period only interstitial growth occurs. They believed these age limits to be too early. In their complete series of patients under 20 years of age, they found the appositional marginal growth still incomplete. Between the twentieth and thirtieth years, they stated, the skull and brain come to the end of their growth, but there are wide individual variations so that in some persons these limits may be lower or higher.

In these quotations I think lies the essence of the explanation of the occurrence of the bulging of the squamous portion of the temporal bone in these three young adults. The only obvious explanation is that in each the tumor was present for a considerable time and exerted direct pressure on the braincase in its naturally weakest part at a time when it was still plastic. An early occurrence permitted the tumor to take advantage of the resources of the skullcase to be molded by the added pathologic mass because of its inherent elasticity. Consequent added intracranial capacity could permit the necessary decompression to remove or modify the symptoms existing at the time before the bulging occurred.

In case 1 the paresis of the right extremities developing at the age of 11 years may or may not have been indicative of a lesion of the left cerebrum. Also, the disappearance of the weakness after a period of two years may or may not have been an indication of decompression of the growth by the giving way of the left squama. The patient stated that he was never aware of hemianopia, never had weakness of the right extremities after the age of 13 years or of the right lower part of the face at any time and never recognized any degree of asymmetry in his skull. Nevertheless, he had, on admission, a right hemiparesis, a right homonymous hemianopia and a bulging of the left squama. His only complaint was the grand mal seizures. Snapshots taken at the age of 18 years show that the prominence in the left temporal region was just about as apparent then as now. It would appear, therefore, that the first symptoms of tumor of the left temporal lobe began at the age of 11 years, and that weakness of the right side gradually lessened in intensity within two years and then remained distinctly lessened to such a degree that he did not recognize it. The lack of knowledge of inability to see to the right, highly valuable in confirming the diagnosis, might sug-

2. Spiller, W. G.: On Arrested Development and Little's Disease, J. Nerv. & Ment. Dis. **25**: 81 (Feb.) 1898.
3. Dabelow, A.: Ueber Korrelationen in der phylogenetischen Entwicklung der Schädelform: II. Beziehungen zwischen Gehirn und Schädelbasisform bei den Mammaliern, Morphol. Jahrb. **67**: 84-133 (June) 1931.
4. Bolk, L.: On the Premature Obliteration of Sutures in the Human Skull, Am. J. Anat. **17**: 495, 1915.
5. Schüller, Arthur: Roentgen Diagnosis of Diseases of the Head, translated by F. F. Stocking, St. Louis, C. V. Mosby Company, 1918.
6. Merkel, F. S.: Handbuch der topographischen Anatomie, Brunswick, F. Vieweg & Sohn, 1885-1890, pp. 43 and 60.
7. Loeschcke, H., and Weinnoldt, Hedda: Ueber den Einfluss von Druck und Entspannung auf das Knochenwachstum des Hirnschädels, Beitr. z. path. Anat. u. z. allg. Path. **70**: 406, 1922.

gest so gradual an onset that plenty of time was afforded for its compensation. It is known that hemianopic patients do not always recognize their hemianopia.

In case 2 the sequence of events is much the same. The first appearance of weakness occurred in the right limbs at 3 years of age. Here, again, a more or less complete recovery ensued, but it was followed by a relapse at 9 years of age. The bulging of the opposite squama no doubt was caused by the shifting of the lateral ventricles and midline structures to the right, exerting direct pressure there.

It is interesting to note that complete hemiplegia and complete aphasia followed the removal of one third of the tumor wall of the cyst in a right-handed person. Both subsided satisfactorily, however, but not completely, and no further convulsions have occurred over a period of five months.

In case 3 in addition to the bulging of the left squama, there existed a hyperostosis of the left side of the face which the young man's mother stated had been present throughout life. The bulging is indicative of direct intracranial tumor pressure, as in the previous cases. But what explanation may be offered for the enlargement of the bones of the face? Cranial enlargement overlying meningeal fibroblastoma has received much recent study, but enlargement of the bones of the face in the immediate vicinity of a meningeal growth has not projected itself as far as is known into the literature. There does not seem to be, however, any reason why it might not occur.

Winkelman [8] found bony thickening and some tumor infiltration of the orbital roof in association with an overlying basal meningeal fibroblastoma. He referred to Spiller's [9] quotation of Pancoast, that the latter has seen roentgen evidence of increased density and thickening of bone in association with meningeal tumors of the base. List [10] cited Mayer, who found by roentgen examination hyperostosis of the petron in angle tumor without going into the nature of the histologic diagnosis. The base of the skull and the bones of the face, after all, have much in common with the bones of the vault in origin, structure and function. The facial bones do not contribute to the braincase but become differentiated to accommodate and protect the organs of the special sense and the upper part of the digestive path. Whatever may be the mechanism responsible for the bony morphogenesis, it would appear that its location is determined by the site of the tumor.

If the statement is true that the facial enlargement was present throughout life, what is its connection with the fibroblastoma? If the tumor produced a facial enlargement, it must have been present in extremely early life.

SUMMARY

1. Three instances of focal bulging of the squamous portion of the temporal bone, due to an underlying brain tumor, were discovered in adults, aged from 23 to 28, and afforded valuable information for diagnosis and operation.

2. In two cases, the bulgings probably occurred in childhood.

3. Two cases were due to large gliomatous cysts; one, to a meningeal fibroblastoma.

4. Two cases were unilateral; the other was bilateral, producing a milder bulging of the opposite squama.

5. The meningeal fibroblastoma, arising from the lesser wing of the left sphenoid bone, in addition to the bulging of the left squama, was associated with hyperostosis of the bones of the corresponding side of the face.

6. There is an influence of the growth of the brain on suture closure and on the size and shape of the braincase.

7. The size and shape of the young plastic skull is especially influenced by direct pressure from an encroaching intracranial tumor in the region of the squama.

8. The question arises as to whether or not a fibroblastoma of the base of the brain in the vicinity of the lesser wing of the sphenoid bone can produce hyperostosis of the facial bones of the ipsilateral side.

115 South Forty-Fourth Street.

8. Winkelman, N. W.: Hyperostosis and Tumor Infiltration of Base of Skull Associated with Overlying Meninger' Fibroblastoma, Arch. Neurol. & Psychiat. **23:** 495 (March) 1930.

9. Spiller, W. G.: Hyperostosis Associated with Underlying Meningeal Fibroblastoma, Arch. Neurol. & Psychiat. **21:** 637 (March) 1929.

10. List, Carl: Die Differentialdiagnose der Kleinhernbrücken-winkelerkrankungen mit besonderer berücksichtigung der Tumoren, Ztschr. f. d. ges. Neurol. u. Psychiat. **144:** 73, 1933.

THE USE OF THORIUM DIOXIDE IN THE DIAGNOSIS OF LIVER ABSCESS

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AND
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During the last three years, numerous articles have appeared in the literature on the use of colloidal thorium dioxide in roentgenologic diagnosis. Most of this work has been experimental and, because of the questionable sequelae, it has not been widely used in clinical diagnosis. The Council on Pharmacy and Chemistry of the American Medical Association [1] recently gave a comprehensive report on the general use of the drug; it considered it still in the experimental stage.

According to available literature, thorium dioxide was first used clinically by Radt.[2] Since that time, many reports concerning its use in small series of cases have been recorded.

Stewart, Einhorn and Illick [3] have used thorium in the diagnosis of patients with varied clinical complications.

McDonald [4] used the drug as an aid in the clinical diagnosis in eighteen patients. At the time of his report, none of these cases had come to autopsy.

Menville [5] gives probably the most comprehensive report in the use of thorium dioxide in visualization of the lymphatic system.

DISTRIBUTION OF THORIUM IN TISSUES

Thorium dioxide possesses the property of depositing itself throughout the cells of the reticulo-endothelial system. The liver, spleen, bone marrow and lymphatic glands receive relatively the same amounts. Smaller

From the Department of Roentgenology, Duke University School of Medicine.

1. Thorotrast, J. A. M. A. **99:** 2183 (Dec. 24) 1932.

2. Radt, P.: A New Method of Roentgenological Diagnosis of the Liver and Spleen After Injection of Contrast Metals, Med. Klin. **26:** 1888-1891 (Dec.) 1930.

3. Stewart, W. H.; Einhorn, Max, and Illick, Earl: Hepatography and Lienography Following Injections of Thorium Dioxide, Am. J. Roentgenol. **27:** 55-58 (Jan.) 1932.

4. McDonald, I. G.: The Use of Thorium Dioxide as an Aid to Clinical Diagnosis, Canad. M. A. J. **27:** 136-137 (Aug.) 1932.

5. Menville, L. J., and Ané, J. N.: Roentgen Visualization of Lymph Nodes in Animals, J. A. M. A. **98:** 1796-1798 (May 21) 1932.

amounts have been found in the suprarenals, the ovary and the kidneys.

Radt made histologic studies of the liver and spleen, one year and nine months after injecting thorium in mice. He was unable to find any pathologic changes. His conclusions were that it was a safe procedure and that the drug was nontoxic.

Shute and Davis [6] were impressed, however, by the widespread degeneration found in the liver and spleen. The dosage of Thorotrast used by them was considerably larger than is necessary to visualize these organs on the roentgenogram. These observations correspond with our results in which large doses of from 0.5 to 2 cc. were given intravenously to small white mice. Smaller doses, from 0.05 to 0.1 cc., were well tolerated, without evidence of degenerative changes. Kadrnka [7] suggested the possibility of therapeutic effects, as he had two cases with advanced carcinoma which were considerably improved for a time. It has been hoped that by subcutaneous injection the lymphatics will take up the thorium and some of it will be secreted into tumor tissue, thereby producing more absorption of radiant energy. Menville [5] found that the lymphatic system did not take up thorium on intravenous injection. Small amounts of thorium were injected into the tissues surrounding blood vessels. Roentgenograms taken later showed the lymph nodes clearly visualized.

INHERENT DANGERS IN THE USE OF THORIUM DIOXIDE

The question of radioactivity of thorium dioxide is discussed fully by the Council on Pharmacy and Chemistry,[1] and insufficient time has elapsed to determine, because of the imperfect elimination, whether or not a partial conversion to mesothorium and radiothorium will occur.

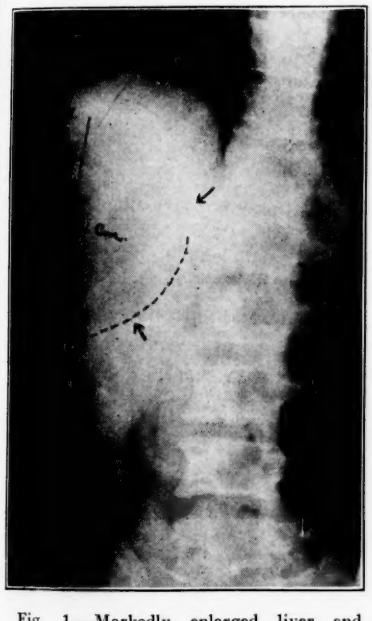

Fig. 1.—Markedly enlarged liver and cavity measuring 14 cm. in diameter, situated in the posterior aspect.

There is practically no reaction when the substance escapes into the tissues about the vein.[5] Dickson [8] has attempted various methods of injection of thorium but has been unable to find definite harmful results. The questionable point remains that of ultimate toxicity.

As the majority of reports in the literature are chiefly concerned with the detection of hepatic metastases, other conditions are given in which the intravenous use of thorium dioxide is of value, but no case reports have been cited.

The citation of this case will serve to illustrate the value of hepatolienography as an aid to the diagnosis of liver abscess:

REPORT OF CASE

B. D., a white man, aged 50, a farmer, was admitted to the medical service of Duke Hospital, Nov. 21, 1932, complaining of pain in the right upper part of the abdomen of seven weeks' duration, accompanied by a mild diarrhea.

The patient had been well until the last five years, during which time he had had intermittent attacks of diarrhea, coming on every two or three months and lasting about two days. At various times during this period, blood had been noticed in the stool. Seven weeks prior to admission, he was forced to quit work because of a severe, sharp, penetrating pain under the right lower costal margin. The pain was continuous and could not be relieved by sedatives. There was no nausea or vomiting. Four weeks before admission, his temperature became elevated for four days. Following this there was an intermittent diarrhea, with as many as twelve stools a day. They were watery in character and at times contained mucus and blood.

Fig. 2.—After aspiration of the cavity.

Physical examination was essentially negative except for the large mass filling the right upper part of the abdomen and extending down into the flank, four finger-breadths below the costal margin. Examination of the blood was essentially negative except for a mild secondary anemia. Examination of the stool disclosed gross blood which was watery in character. Amoeba histolytica was disclosed by microscopic examination, which showed numerous motile organisms.

Emetine hydrochloride in 1 cc. doses was begun, December 18. Thorium dioxide was given in 12 cc. doses with a total dosage of 72 cc. over a period of fourteen days. Roentgen examination of the abdomen three days after the last injection disclosed a markedly enlarged liver and a large rounded area of diminished density situated in the posterior portion of the liver, measuring 14 cm. in diameter.

Jan. 7, 1933, the abscess was aspirated and about 300 cc. of muddy pus was obtained. No amebas were found on microscopic examination.

January 14, the patient was discharged with instructions to return for further treatment. The roentgen examination showed that the abscess cavity was about half its former size.

Rapid Typing of Pneumococci.—A rapid typing for pneumococci that would avoid the present clinical delay is currently reported by Drs. R. H. Sia and S. F. Chung (*Proc. Soc. Exper. Biol. & Med.* **29**:792 [April] 1932) of the Peiping Union Medical College. The Sia technic consists in plating the clinical material on type-specific antiserum-agar, that is, on dextrose-agar plus from 1 to 5 per cent of type-specific antipneumococcus rabbit serum. The homologous type pneumococcus colonies growing in the depths of this medium show annular opacities or local precipitin reactions surrounding each colony. The development of these annular opacities is allegedly strictly type specific.

6. Shute, Evan, and Davis, M. E.: Histologic Changes in Rabbits and in Dogs Following the Intravenous Injection of Thorium Preparations, Arch. Path. **15**: 27-34 (Jan.) 1933.

7. Kadrnka, S.: Hepatosplenography: Radiologic Method of Exploration of the Parenchyma of the Liver and Spleen Through the Intravenous Introduction of Thorotrast, Schweiz. med. Wchnschr. **61**: 425-427 (May 2) 1931; Hepatosplenography, Radiology **18**: 371-377 (Feb.) 1932.

8. Dickson, W. H.: Hepatography, Canad. M. A. J. **27**: 125 (Aug.) 1932

Clinical Notes, Suggestions and New Instruments

PRIMARY CARCINOMA OF LIVER WITH SPONTANEOUS RUPTURE

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Review of this case is undertaken because of the infrequent occurrence of spontaneous rupture of a primary carcinoma of the liver, simulating an acute surgical condition of the abdomen.

A white man, aged 34, was admitted to the hospital, Oct. 12, 1932, with a diagnosis of ruptured peptic ulcer, made by a physician in a neighboring town. The family history revealed the fact that a maternal grandfather and one brother were supposed to have had congenital syphilis. The past history was negative for serious illness, operations or injuries.

About six years before, the patient had consulted a physician because of gas and constipation. At that time he was told that he had "liver and heart trouble." He was given medicine which relieved him so much that he was able to resume his work on the farm. During the past six years he had been fairly comfortable, although he had suffered from flatulence and constipation almost constantly. He had noticed a gradual loss of weight—about 25 pounds (11.3 Kg.) during the past two years. He had never experienced any abdominal pain.

Sept. 10, 1932, the patient drove a tractor, as usual. Next day he had a sudden, lancinating pain in the right upper part of the abdomen, which was not referred. He was nauseated but did not vomit. He was in mild shock when the family physician was called, and, with a history of gastro-intestinal disturbance and muscular rigidity of the right upper part of the abdomen, a diagnosis of ruptured peptic ulcer was made.

The temperature on admission was normal, the pulse 130 and very weak. On physical examination the patient was conscious, cooperative, in mild shock and acutely ill. He appeared very anemic and there was a slight icteric tinge of the skin. The face and trunk were covered with many raised tumors, varying in size from a pea to a walnut, some with sessile and others with pedunculated bases. (Similar tumors were present on one brother, the mother and a maternal grandfather and were typical of fibroma molluscum, or Recklinghausen's disease.)

There were a few patches of bronchopneumonia in the right base. The cardiac dulness extended 1 cm. to the left of the midclavicular line. The point of maximum intensity was in the fifth interspace, and the heart sounds were of poor quality. There was a loud systolic murmur at the apex and the midsternum transmitted toward the left axilla. There was moderate rigidity of the muscles in the right upper abdominal quadrant. The rest of the abdomen was quite distended and voluntary rigidity was present. There was a definite mass palpable in the upper quadrant which extended 13 cm. below the costal margin and 12 cm. to the left of the midsternal line. It was not particularly tender and moved with respiration. The prostate was of normal size and consistency. Bones, joints and reflexes were normal. There was no adenopathy.

The white count was 13,700 with 86 per cent polymorphonuclear cells, 12 per cent of which were immature forms. The hemoglobin was 65 per cent and the erythrocytes numbered 3,120,000. The urine showed two plus albumin and many hyaline and coarsely granular casts. The Wassermann test was not done. A flat plate of the abdomen was negative for free gas under the diaphragm.

Symptomatic treatment was given along with digitalis in large doses. The condition of the patient rapidly grew worse. The pulse ranged between 130 and 170, the temperature rose from normal to 106, and the respirations were increased in proportion. The pneumonia extended and he spit up large quantities of tenacious, purulent sputum. There was occasional vomiting but never any hematemesis. The white count increased to 33,600. The patient became delirious just before death and died on the fourth day. A meningismus developed just before death with marked orthotonus. The Kernig sign was positive, the abdominal reflexes were absent, the knee jerks were diminished, and the Babinski sign was positive bilaterally.

The autopsy revealed an extensive bronchopneumonia of the right base. The heart was slightly enlarged in all diameters and there were calcareous deposits and narrowing of the orifice of the mitral valve. About 1,500 cc. of hemolyzed blood was found in the abdominal cavity. The liver filled the entire upper part of the abdomen. It was grayish white and the surface was covered with nodules varying in size from a pea to a walnut. At the lower anterior surface of the right lobe there was a deep rent in the capsule and liver substance, about 3.5 cm. long, which apparently accounted for the free blood present. The liver was very friable, the pressure of the fingers on the organ during removal being sufficient to tear it. The weight was 3,360 Gm. (7 pounds). A large circumscribed tumor in the center measured 12 by 10 cm., and numerous smaller ones were seen throughout the substance of the liver.

The gallbladder and ducts were normal in every respect. The stomach, intestine, kidney, bladder and prostate were normal. There was definite adenopathy of the mesenteric glands of the colon and upper part of the jejunum. Both kidneys showed evidence of chronic nephritis.

The microscopic examination of the liver revealed a primary carcinoma of the multiple nodular variety, the nuclei and general structure of the cells giving definite evidence of origin from the liver tissue. The mesenteric glands showed only fibrosis and lymphocytic infiltration.

SUMMARY

A man, aged 34, with a history of chronic indigestion, was suddenly taken ill while at work, with symptoms simulating an acute surgical condition of the abdomen. The patient was not operated on and rapidly became worse, dying within four days. Necropsy revealed a primary carcinoma of the liver, which had ruptured spontaneously, filling the abdomen with 1½ quarts of dark blood.

COMMENT

This case is presented because of the unusual occurrence of spontaneous rupture of primary carcinoma of the liver with symptoms of an acute condition of the abdomen.

It is interesting to conjecture that there may have been a tendency to tumor growth, owing to the presence of fibroma molluscum over the trunk and face. A diagnosis of ruptured peptic ulcer was easily ruled out after the initial involuntary rigidity disappeared and the liver became palpable. Later, the diagnosis of chronic passive congestion of the liver or some new growth in this organ was considered. The fact that the patient had been working hard for a number of years with no symptoms of cardiac decompensation would tend to rule out the former. We were unable to account for the abdominal symptoms until necropsy was performed. It seems quite plausible that the jar from the tractor which the patient was driving was sufficient to cause the rupture found in the liver.

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UREA CRYSTALS IN CANCER

WILLIAM M. MILLAR, M.D., CINCINNATI

The peculiarly penetrating fetor of a sloughing cancer is one of the horrible aspects of this disease. For the past year at the Tumor Clinic of the Cincinnati General Hospital, urea crystals [1] have been advocated and prescribed in such cases. If they are packed into the wound the odor will be stopped to a great extent. Although they dissolve in a few minutes, the offensive character of the ulcer becomes less with each application. The crystals are cheap, they possess a considerable antiseptic value, and there is no fear of a systemic reaction. The danger of burning the surrounding skin, which is considerable when the average dispensary patient attempts to use surgical solution of chlorinated soda at home, is avoided. There is one objection. After several days' treatment an occasional patient will complain of pain in the wound after packing. This can readily be relieved by morphine or other narcotics, a therapeutic measure which is not as drastic as it sounds, for by this time the terminal stage has been reached in the greater proportion of cases, and the patients have been taking opiates for the relief of the pain of the cancer itself. This being the case, there is no reason why the strength or frequency of the narcotic cannot be adequately increased.

From the Department of Surgery, College of Medicine of the University of Cincinnati.

1. Suggested by Dr. John Foulger of the Department of Pharmacology, University of Cincinnati College of Medicine.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

DEXTROSE (See New and Nonofficial Remedies, 1933, p. 267).

The following dosage form has been accepted:

Dextrose-Ringer's Stock Solution Five Times Concentrated-Abbott: A solution containing 25 per cent by weight of dextrose-U. S. P. (equivalent to 28.1 Gm. $C_6H_{12}O_6.H_2O$ in 100 cc.) in concentrated Ringer's solution (five times strength). When one volume is diluted with water to exactly five volumes, the resulting solution contains 5 per cent by weight of dextrose-U. S. P. (equivalent to 56 Gm. $C_6H_{12}O_6.H_2O$ in 1000 cc.) in a Ringer's solution containing in 1,000 cc. of aqueous solution: sodium chloride 7.0 Gm.; potassium chloride 0.3 Gm.; anhydrous calcium chloride 0.25 Gm. The product is marketed in ampules of 100 cc.

Actions and Uses.—This product (after dilution with four volumes of freshly distilled water, which provides a somewhat hypertonic solution) is proposed for continuous venoclysis over prolonged periods. It is intended as a source of dextrose for the maintenance of nutrition and of ions in balanced ratio for the maintenance of the salt equilibrium of the blood stream.

Dosage.—According to the needs of the individual case. Generally, 500 cc. per hour may be administered until the blood pressure is satisfactory. The flow is then diminished to 100 cc. per hour, which may be continued for several days if necessary. When given for shock in the absence of low blood pressure, the rate of flow should not exceed 200 cc. per hour at any time.

Prepared by the Abbott Laboratories, North Chicago, Ill. No U. S. patent or trademark.

Dextrose-Ringer's stock solution five times concentrated-Abbott occurs as a clear, colorless solution possessing a slightly saline taste. The specific gravity is from 1.128 to 1.120 at 20 C.

Add a few drops of the solution to 5 cc. of hot alkaline cupric tartrate test solution; a copious red precipitate of cuprous oxide is formed. Dilute 3 cc. of solution to 10 cc. and add one drop of iodine solution; the liquid is colored yellow (*soluble starch, sulphite*): 2 cc. of the solution diluted to 10 cc. conforms to the U. S. P. X test for heavy metals: 5 cc. of the solution conforms to the U. S. P. X test for arsenic.

To 4 cc. of Dextrose-Ringer's stock solution five times concentrated-Abbott in a suitable test tube add sufficient water to make 9 cc. of solution; add 1 cc. of freshly prepared sodium cobaltic nitrite solution and mix thoroughly. Similarly treat, in exactly similar test tubes, portions of a standard aqueous solution containing 1.5 Gm. of potassium chloride (previously dried) in 1,000 cc.: the turbidity produced by 4 cc. of Dextrose-Ringer's stock solution five times concentrated-Abbott at the end of ten minutes is less than that produced by 5 cc., and greater than that produced by 4 cc. of the standard solution (*limit of potassium* $[K^+]$).

Transfer 1 cc. of Dextrose-Ringer's stock solution five times concentrated-Abbott to a Nessler tube, add 0.5 cc. of diluted acetic acid, 40 cc. of water and 5 cc. of ammonium oxalate solution. Dilute at once to 50 cc. and mix thoroughly. Similarly treat portions of a standard solution formed by dissolving 0.287 Gm. of precipitated calcium carbonate (previously dried to constant weight at 200 C.) in from 10 to 15 cc. of water containing 3 cc. of acetic acid and diluted to 250 cc.: the turbidity produced by 1 cc. of the Dextrose-Ringer's stock solution five times concentrated-Abbott at the expiration of fifteen minutes is less than that produced by 1.25 cc., and greater than that produced by 1 cc. of the standard solution (*limit of calcium* $[Ca^{++}]$).

The dextrose content as determined by the optical rotation method of the U. S. P. X is not more than 26.82 Gm. anhydrous dextrose (29.5 Gm. $C_6H_{12}O_6.H_2O$) nor less than 24.26 Gm. anhydrous dextrose (26.7 Gm. $C_6H_{12}O_6.H_2O$) per hundred cubic centimeters. Treat 5 cc. of Dextrose-Ringer's stock solution five times concentrated-Abbott with an excess of sulphuric acid, evaporate to dryness, and ignite to constant weight at 750 C.: the weight of ash obtained is not more than 0.242 Gm., nor less than 0.219 Gm.

Transfer 20 cc. of Dextrose-Ringer's stock solution five times concentrated-Abbott to a 100 cc. volumetric flask, add water, dilute to the mark and mix thoroughly. Transfer 10 cc. of this solution to a 400 cc. beaker, add 50 cc. of water and 4 cc. of diluted nitric acid; dilute to 200 cc., add 15 cc. of silver nitrate solution; heat to boiling and allow to stand until the precipitate is granular. Filter onto a weighed Gooch crucible previously heated to 140-150 C.; wash the precipitate well with hot water; dry to constant weight at 140-150 C.: the chloride (Cl^-) calculated from the silver chloride weighed is not more than 2.1 per cent nor less than 1.9 per cent of weight of sample of Dextrose-Ringer's stock solution five times concentrated-Abbott.

DEXTROSE (See New and Nonofficial Remedies, 1933, p. 267; THE JOURNAL, Feb. 25, 1933, p. 574).

The following dosage forms have been accepted:

Sterile 2½% Dextrose Solution in Vacoliter Container: Each 100 cc. contains dextrose, U. S. P., 2.62 Gm.

Prepared by Don Baxter Intravenous Products Corporation, Chicago (American Hospital Supply Corporation, Chicago, eastern distributor).

Sterile 7½% Dextrose Solution in Vacoliter Container: Each 100 cc. contains dextrose, U. S. P., 7.85 Gm.

Prepared by Don Baxter Intravenous Products Corporation, Chicago (American Hospital Supply Corporation, Chicago, eastern distributor).

Sterile 20% Dextrose Solution in Vacoliter Container: Each 100 cc. contains dextrose, U. S. P., 21 Gm.

Prepared by Don Baxter Intravenous Products Corporation, Chicago (American Hospital Supply Corporation, Chicago, eastern distributor).

Sterile 25% Dextrose Solution in Vacoliter Container: Each 100 cc. contains dextrose, U. S. P., 26.25 Gm.

Prepared by Don Baxter Intravenous Products Corporation, Chicago (American Hospital Supply Corporation, Chicago, eastern distributor).

CHLORBUTANOL (See New and Nonofficial Remedies, 1933, p. 137).

Chlorbutanol (Hydrous)-Merck.—A brand of chlorbutanol-N. N. R. containing one molecule of water in two of chlorbutanol. This product is used in the preparation of aqueous solutions.

Manufactured by Merck & Co., Inc., Rahway, N. J. No U. S. patent or trademark.

Chlorbutanol (Anhydrous)-Merck.—A brand of chlorbutanol-N. N. R. For use in the preparation of oil solutions.

Manufactured by Merck & Co., Inc., Rahway, N. J. No U. S. patent or trademark.

NEOCINCHOPHEN (See New and Nonofficial Remedies, 1933, p. 141).

Neocinchophen-Merck.—A brand of neocinchophen-N. N. R.

Manufactured by Merck & Co., Inc., Rahway, N. J. No U. S. patent or trademark.

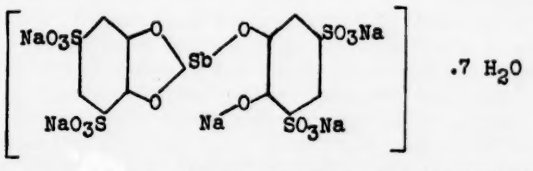
PRELIMINARY REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING PRELIMINARY REPORT.

PAUL NICHOLAS LEECH, Secretary.

FUADIN

Fuadin is a complex trivalent antimony compound (sodium antimony III biscatechol-disulfonate of sodium), distributed by the Winthrop Chemical Company, claimed to have the following structural formula:



It is proposed for use in the treatment of bilharziasis and granuloma inguinale in place of antimony and potassium tartrate. It is marketed in the form of a solution, in ampules containing about 6.3 per cent of the drug and representing about 8.5 mg. of antimony per cubic centimeter. It is administered in doses of from 1.5 to 5 cc. until a total of from 40 to 45 cc. has been given.

When the paper by Williamson, Anderson, Kimbrough and Dodson on "The Specific Effect of 'Fouadin' (Fuadin) on Granuloma Inguinale" (this issue, p. 1671) was submitted to THE JOURNAL, the editor informed the authors that the product must be submitted to the Council before the paper could be accepted for publication. After some delay, the Winthrop Chemical Company made formal presentation of the product for the Council's consideration.

Name.—The Council's Committee on Nomenclature considered the name Fuadin (named after Fuad I, king of Egypt, because of his interest in the product). The committee felt that the name is regrettable, since it introduces the consideration of patronage, which is not desirable in science, and besides gives no inkling of the chemical nature of the product. However, it was not found technically in conflict with the Council's rules and, since the firm for practical reasons hesitates to give it up, the Council voted to recognize it. The firm stated its intention of using the scientific (chemical) name on the label in conformance with the Council's rules.

Therapeutic Usefulness.—Fuadin was synthesized by H. Schmidt of Elberfeld for use in the treatment of bilharziasis. The pharmacology of this substance has to some extent been elucidated by Hammuda of Cairo and Weese of Elberfeld, who determined the limits of toxicity; these investigators, it is stated, found the compound safe in therapeutic dosage. The claim is advanced that Fuadin has practically no action on the vagus

(although slowing of the pulse is said to occur almost without exception in the therapeutic use) and that it is excreted chiefly in the urine, only slightly in the feces and not at all by the skin. Hassan determined the excretion during clinical administration. No data on toxicity and excretion were found in the published literature. Such data should be made available as soon as possible.

Khalil and his co-workers [1] have treated a large series of cases of bilharziasis with Fuadin with reported excellent results. Fuadin is said by these workers to be superior to antimony and potassium tartrate ("tartar emetic") in that it may be administered intramuscularly, side actions are less pronounced, and the course of treatment may be shortened.

Since 1913, granuloma inguinale has been recognized as an endemic disease in the United States; previous to then it had been looked on as chronic chancroids or tuberculosis of the genitalia. The disease is now known to be rather widely prevalent; it was studied in Brazil by Aragão and Vianna; it occurs in the West Indies and is quite common in the Dutch East Indies.

Fox [2] and Cole, Miskjian and Rauschkolb [3] have published extensive reviews on the subject, including case reports. The disease appears to be chiefly venereal, characterized by chronic granulomatous ulceration of the genitalia, occasionally with contact lesions on other parts of the body. Tissue smears stained with Giemsa's stain almost invariably reveal the presence of the so-called Donovan bodies, which are thought possibly to bear an etiologic relationship to the disease. McIntosh [4] has suggested the "formaldehyde-gel" test as a diagnostic measure; while this is not specific, it is positive in a large proportion of cases.

In the past, granuloma inguinale has been treated with antimony compounds, chiefly in the form of antimony and potassium tartrate in 1 per cent solution intravenously, but only with moderate success. The disease tends to recur, often after the lesions are apparently entirely healed; smears made from biopsy material taken from the scar tissue may still reveal Donovan bodies.

In the work of Williamson and his co-workers, seven cases treated with Fuadin are reported in detail and seven others are mentioned; four of the former had previously been treated with antimony and potassium tartrate and one probably had been so treated, all with poor results. In all seven cases the lesions were healed over after ten to twelve injections of Fuadin. The authors pronounced these cases cured. Unfortunately, no note is made as to the finding of Donovan bodies, either before treatment was started or after healing apparently had occurred; the "formaldehyle-gel" test of McIntosh similarly is not mentioned. These results are therefore open to criticism; it is not improbable that Donovan bodies may be found in the scars of these healed lesions, and these patients had not been followed for a sufficiently long time to rule out the possibility of relapse. It is unfortunate that more complete data apparently were not obtained in this study.

The authors compare Fuadin with antimony and potassium tartrate; Fuadin is described as a "safe and rapid specific," although some of the patients receiving the injections are said to have had headache, nausea and vomiting; antimony and potassium tartrate is considerably disparaged—the referee believes undeservedly. The occurrence of the aforementioned and other symptoms, such as pain in the bones, which the authors have also observed, indicates that the administered amount of antimony is as large as may safely be used. Probably several thousand injections of antimony and potassium tartrate have been administered in the clinic of the Council's referee. He reported that occasionally a little coughing occurs and, once in a while, emesis; when properly given intravenously, "abscess and sloughing" never supervene; the referee has never seen fainting after injection. The authors describe, as late effects of antimony and potassium tartrate, "fever, continuous vomiting, jaundice and sudden death"; aside from one or two cases of mild icterus, no untoward late effects have been observed by the referee; he considers the comparison unfair. The development of white scars in the healing of the lesions is also mentioned; this is not uncommon in any inflammatory reaction in the skin of the Negro in which the lesion is deep enough to destroy the pigment layer.

No information was available to the Council's referee as to the effects of Fuadin on the kidneys. As antimony compounds are known to be renal irritants, caution is indicated until this phase of the problem has been properly elucidated. The use of Fuadin in granuloma inguinale is still in the experimental stage; the data presented in the paper of Williamson et al. are incomplete and must be supplemented by more complete reports before the therapeutic usefulness of Fuadin may be considered to be established.

As a result of its consideration of Fuadin, the Council held that the use of this drug in granuloma inguinale is still in the experimental state and that great caution is necessary in its use. The Council therefore postponed further consideration of the product until confirmatory evidence of its therapeutic value becomes available. If such evidence becomes available, the A. M. A. Chemical Laboratory will be asked to investigate the product with a view to elaborating standards. In order that Fuadin may be introduced for experimental use by qualified investigators, the Council authorized publication of this preliminary report in the same issue of THE JOURNAL in which the report of Williamson and his associates appears.

1. Khalil, M.; Nazmi, M.; Peter, F. M.; el Din, M. Salah and el Betash, M. H.: Deutsche med. Wchnschr. **55**: 1125 (July 5) 1929.
2. Fox, Howard: Granuloma Inguinale: Its Occurrence in the United States, J. A. M. A. **87**: 1785 (Nov. 27) 1926.
3. Cole, Miskjian and Rauschkolb: Dermat. Ztschr. **53**: 127 (April) 1928.
4. McIntosh, J. A.: The Etiology of Granuloma Inguinale, J. A. M. A. **87**: 996 (Sept. 25) 1926; Study of Etiology of Granuloma Inguinale, J. Tennessee M. A. **19**: 190 (Nov.) 1926.

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS.

PAUL NICHOLAS LEECH, Secretary.

PANCRESAL TABLETS NOT ACCEPTABLE FOR N. N. R.

Pancresal Tablets, according to the label on specimens received from the distributor, Pancresal Sales Company, Inc., contain "the active principle of the pancreas combined with asparagin and activating Elektrolytes." Each tablet is stated to contain sodium bicarbonate, 0.124 Gm.; dekamethylenediguanidin carbonate, 0.006 Gm.; Asparagin, 0.124 Gm.; "Pancracym," 0.156 Gm., and "Mineral-Vitamine," 0.590 Gm. Subsequently a letter was received from the manufacturer, Dr. Richard Weiss, Fabrik Pharmazeutischer Präparate G. M. B. H., Berlin, Germany, stating that the tablets for the United States market had the following composition: sodium bicarbonate, 0.224 Gm.; dekamethylenediguanidin carbonate, 0.006 Gm.; Asparagin, 0.075 Gm.; "Pancracym," 0.125 Gm., and "Mineral-Vitamine," 0.250 Gm. The "Dekamethylenediguanidin carbonate" is declared to be similar to "Synthalin," which is stated to be dekamethylenediguanidin hydrochloride, but to be superior to it; no convincing evidence for the assertion is offered. The "Mineral-Vitamine" is stated to be composed of dried yeast, calcium lactate, dicalcium phosphate, sodium sulphate, magnesium citrate, potassium iodide and powdered thyroid. The "Pancracym" is stated to be prepared from pancreas glands by extracting them with acetone, acetone and ether, and ether, and the residue dried and powdered. No evidence for the efficacy of this component was offered.

The effective agent in Pancresal Tablets probably is the dekamethylenediguanidin carbonate. It is unlikely that the pancreatic extract which is contained in the tablets is of any significant value; many attempts have been made to isolate a pancreatic extract that is efficacious when administered by mouth, but so far these attempts have not been successful. The scientific data that are presented by two advertising circulars for Pancresal Tablets are extremely inadequate and make it probable that the preparation has no value other than that imparted by the content of dekamethylenediguanidin carbonate. Insulin substitutes of no greater potency than that claimed for Pancreasal Tablets are without practical value. They accomplish almost nothing and are harmful because they are an invitation to diabetic patients to depend on this inadequate therapy in place of an adequate and sane insulin therapy.

Pancresal Tablets are unacceptable for New and Nonofficial Remedies because they present an unscientific complex mixture

of indefinite composition which is marketed with unwarranted claims under a noninforming therapeutically suggestive name and in a way to lead the diabetic patient to place false dependence on this form of inadequate therapy.

The foregoing statement of the Council's action on Pancresal Tablets was transmitted to the Pancresal Sales Co., Inc. Since no reply was received from the firm, a letter was written after five months concerning the failure to reply. Subsequently a letter was received through the firm from Dr. Richard Weiss of Berlin. This letter was examined by the Council's referee and found to contain nothing which justified any essential change in the Council's statement concerning Pancresal Tablets.

Subsequent to the first consideration of Pancresal Tablets, inquiries were received by the secretary of the Council concerning the testimonials from physicians appearing in advertisements for the product. Inquiries were sent to the two physicians named in the advertisements concerned, asking whether the testimonials were authentic and whether at the time of receiving the letter the physicians still subscribed to the statements. The first physician replied in part:

"I believe Pancresal has no merits, that it is . . . a fake. This 'Dr.' Marlow who observed this case in my wards had been warned that diet alone will do all this, without Pancresal.

"Furthermore, I am not the head of the diabetic clinic of the Unity Hospital and am not a lecturer at the Long Island College Hospital.

"I would greatly appreciate if you will let me know the date of receipt of the Pancresal advertisement, for I warned them on October 3, 1932, that I would take legal action against them if they used my name in the future."

The second physician replied:

"The statement I made about the 'Pancresal Tablets' was on April 12, 1932. At that time one of their detail men gave me samples of Pancresal, which I gave to two of my patients. As I stated there was a reduction in the blood and urine sugar, but I was not sure whether diet had anything to do with it. I did not receive any more 'tablets' so I could not say anything definite.

"At present, the issuance of the statement does not meet with my approval. I have just recently found out that they are using my indefinite statement in their advertisements. The only reason I wrote the statement was to get more samples."

From these replies it appears that the statements of the physicians have not even the value of uncontrolled testimonials in favor of Pancresal Tablets.

The Council voted to reaffirm the rejection of Pancresal Tablets for the reasons given.

IODOMIN NOT ACCEPTABLE FOR N. N. R.

Iodomin is a product of the American Bio-Chemical Laboratories, Inc., recommended in the treatment of "catarrhal rhinitis, otitis media catarrhalis, bronchial catarrh" and other disorders of the ear, nose and throat. The American Bio-Chemical Laboratories, Inc., has exploited in this country a number of foreign products, among them: Thymophysin, which was found unacceptable for inclusion in N. N. R. and has been the subject of several critical comments in THE JOURNAL (*J. A. M. A.* **94**:1164 [April 12] 1930; **96**:359 [Jan. 31], 860 [March 14] 1931); Propeptans, which the Council also declared unacceptable for N. N. R.; Disulphamin, a preparation advertised with extravagant therapeutic claims under a high-sounding but meaningless chemical designation (*J. A. M. A.* **95**:1690 [Nov. 29] 1930); and Kephrine, which is now before the Council.

In an advertising circular Iodomin is said to be ". . . a five per cent sodium iodide solution containing traces of free iodine." It is furnished in ampules of 1 cc., intended for subcutaneous injection, to be given ". . . on alternate days or twice weekly" for as many as twelve doses. Infants may receive 0.5 cc.

The following are some of the claims made for this preparation:

"Its pure iodine content is exceedingly low, precluding the possibility of iodism or other untoward reactions. . . . Iodomin is contraindicated only in iodine anaphylactic conditions. . . . The therapeutic and palliative value of Iodomin is predicated upon the presence of a distinct catarrhal condition of the ear, nose or throat. Its primary indications are therefore: Acute Catarrhal Rhinitis, Otitis Media Catarrhalis Acuta, Bronchial Catarrh . . . also recommended as a nonspecific palliative measure in Hydrorrhea and Vasomotor Rhinitis. . . . Coryza will, as a rule, yield to one or two treatments. . . . Allergic Rhinitis rarely yields to less than six injections of Iodomin and may require as many as twelve. . . ."

A preliminary examination by the A. M. A. Chemical Laboratory of the contents of Iodomin ampules purchased in the open market indicated the presence, in 1 cc. of the solution, of 1.2 mg. sodium iodide and 0.7 mg. free iodine; the total solids remaining after evaporation at 95 C. approximated the iodide content. It is concluded from this examination that, instead of being a 5 per cent solution of sodium iodide with a "trace" of free iodine, Iodomin is a solution containing about 0.12 per cent of sodium iodide and about 0.07 per cent of free iodine. These observations seem to show that the advertising contains gross misrepresentation of the amounts of active substance. It is particularly to be noted that the firm avoided conflict with the Food and Drugs Act by omitting mention of the iodide or iodine content on the carton and ampules.

Any aqueous solution of sodium iodide will, on standing, develop traces of free iodine; the impression conveyed that Iodomin represents an advance in the preparation of iodide solutions is unwarranted. It is said to be somewhat irritant on injection; this is not surprising, in view of the hypotonicity and elemental iodine content of the specimen examined.

It is claimed in the advertising circular that the "exceedingly low" pure iodine content precludes the possibility of iodism. This appears to suggest that the composition of Iodomin is such as to diminish the incidence of untoward reactions below that which may occur with similar dosage of ordinary sodium iodide. Naturally, the incidence of toxic responses would be lower with a solution as dilute as the examination indicated Iodomin to be, than with similar use of an actual 5 per cent solution (the concentration claimed—but not found) of sodium iodide. On the basis of the determination quoted, the total iodine dosage administered in Iodomin would appear to be about 1.7 mg., given on alternate days or twice a week; this quantity of iodine, whether elemental or ionic, would not cause iodism and, in fact, could hardly have any important therapeutic effect. The only well established consequence of such dosage is a gradual storage of iodine in the thyroid gland.

Periodically, the parenteral administration of iodine compounds, simple or complex, is reintroduced into therapeutics, usually with fantastic claims. The fact that the inorganic iodides, particularly the sodium and potassium salts, are readily absorbed from the intestinal tract and can produce all the known iodide effects when administered by mouth (except the more severe anaphylactoid effects of intravenous injection) seems to be overlooked by the popularizers of these remedies.

The parenteral use of small doses of iodine in the conditions for which Iodomin is recommended appears to have originated with H. Sternberg of Vienna (*Monatschr. f. Ohrenh.* **64**:401 [April] 1930). His preparation, manufactured by Chemosan, A. G., was introduced in Europe under the name "Rhinostop"; it was said to have the same composition (5 per cent sodium iodide with a trace of free iodine) as that claimed for Iodomin. Sternberg inclined to the opinion that the *free* iodine administered was the chief factor in the therapeutic effect, even though the dosage amounted to only a few hundredths of a milligram; the evidence for this is far from convincing. The only American literature on the use of Iodomin available to the Council is a report (Rosenberg, J.: *Laryngoscope* **42**:883 [Nov.] 1932), without case histories, in which the indicated results are no better than other workers have claimed for the oral administration of sodium or potassium iodide or for other treatments. In fact, assuming that the Iodomin used by the author was similar to that examined by the A. M. A. Chemical Laboratory, the small doses administered could hardly have acted as more than a placebo.

This apparently is another example of the exploitation of a well known drug under a proprietary name with misrepresentation of the content of active substance; a variety of unsubstantiated claims are put forth which seem to convey the impression that the manufacturer by some special process has endowed this simple mixture with exceptional therapeutic virtue.

The Council declared Iodomin unacceptable for inclusion in N. N. R. because it is apparently a simple solution of two well known therapeutic substances (rules 1 and 2), because it is marketed under an uninformative proprietary name (rule 8) with unwarranted and extravagant therapeutic claims (rule 6), and because it is an unscientific preparation apparently containing active ingredients in ineffective quantities and in irrational proportion (rule 10).

Committee on Foods

REPORTS OF THE COMMITTEE

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG, Secretary.

CALUMET BAKING POWDER. COMBINATION TYPE

Manufacturer.—Calumet Baking Powder Company, Inc., Chicago.

Description.—Baking powder containing corn starch, sodium bicarbonate, sodium aluminum sulphate, calcium acid phosphate and 0.15 per cent dried egg white.

Manufacture.—The raw materials and ingredients used are purchased under definite specifications for composition, purity, granulation, etc., all of which are checked analytically by the company laboratories to assure conformity with specifications and food law requirements.

Definite quantities of the ingredients are carefully weighed out and thoroughly mixed in mechanical mixers; the mixture is examined in the laboratory to assure proper mixing and tested for total and available carbon dioxide. A test baking check is made on each individual batch. The baking powder is automatically packed in tins.

Analysis (submitted by manufacturer).—

	per cent
Total carbon dioxide (CO_2)	14.7
Residual CO_2	0.5
Available CO_2 under baking conditions	14.1
Phosphorus (P)	3.7
Aluminum (Al)	2.2
Calcium (Ca)	2.2

Claims of Manufacturer.—For use in baking and cooking recipes calling for baking powder. The product and ingredients conform to the respective United States Department of Agriculture definition and standard. The two acid reacting ingredients for liberation of the leavening gas, because of their different solubilities, produce a "double leavening action" in the dough. The first action releases a portion of the leavening gas in the cold dough, the second releases the remaining gas in the heated dough in the oven.

LIGHT'S BEST OVEN PERFECT FLOUR (BLEACHED)

Manufacturer.—Light Grain and Milling Company, Liberal, Kan.

Description.—Hard winter wheat patent flour; bleached.

Manufacture.—Selected hard winter wheat is cleaned, tempered and milled by essentially the same procedures as described in THE JOURNAL, June 18, 1932, p. 2210. Chosen flour streams are blended and bleached with nitrogen trichloride (one-seventh ounce per 196 pounds).

Claims of Manufacturer.—For baking bread, biscuits and pastries.

H. G. F. STORES CRYSTAL WHITE SYRUP

(85 PER CENT CORN AND 15 PER CENT ROCK CANDY SYRUPS)

SUMMER GIRL BRAND CRYSTAL WHITE SYRUP

(85 PER CENT CORN AND 15 PER CENT ROCK CANDY SYRUPS)

Packer.—D. B. Scully Syrup Company, Chicago.

Distributor.—The H. D. Lee Mercantile Company, Kansas City and Salina, Kan., and Waterbury, Conn.

Description.—Table syrups; corn syrup base (85 per cent) with rock candy syrup (15 per cent); the same as Crystal White Syrup (85 Per Cent Corn and 15 Per Cent Rock Candy Syrups) (THE JOURNAL, April 15, 1933, p. 1174).

THE NEW PETTIJOHN'S. ROLLED WHEAT WITH ALL THE BRAN

Manufacturer.—The Quaker Oats Company, Chicago.

Description.—Flaked cut whole wheat.

Manufacture.—Selected soft wheat is cleaned of weed seed, chaff and other extraneous matter and scoured; the individual wheat groats are machine cut into several pieces. The cut wheat is steamed, flaked between steel rolls and packed in cartons.

Analysis (submitted by manufacturer).—

	per cent
Moisture	11.9
Ash	1.6
Fat (ether extraction method)	2.1
Protein (N × 5.7)	11.8
Crude fiber	2.2
Carbohydrates other than crude fiber (by difference)	69.2

Calories.—3.5 per gram; 99 per ounce.

Claims of Manufacturer.—A whole wheat breakfast cereal.

"SWEET TOOTH" BUCKWHEAT PANCAKE FLOUR

Manufacturer.—Black Bros. Flour Mills, Beatrice, Neb.

Description.—Self-rising buckwheat pancake flour containing buckwheat flour, wheat "clear" flour, white corn flour, calcium acid phosphate, sodium bicarbonate, salt, corn sugar and powdered skim milk.

Manufacture.—The ingredients are separately weighed, mixed in a batch mixer and automatically packed in paper bags.

Analysis (submitted by manufacturer).—

	per cent
Moisture	11.1
Ash	6.4
Fat (ether extraction method)	2.7
Protein (N × 6.25)	11.8
Reducing sugars as dextrose	0.6
Sucrose (copper reduction method)	1.2
Crude fiber	1.6
Carbohydrates other than crude fiber (by difference)	66.4

Calories.—3.4 per gram; 97 per ounce.

Claims of Manufacturer.—For making pancakes.

(a) MADICO MALTOSE-DEXTRIN (PLAIN) ("A")

(b) MADICO MALTOSE-DEXTRIN WITH 2 PER CENT OF SODIUM CHLORIDE ("B")

(c) MADICO MALTOSE-DEXTRIN ("C") WITH POTASSIUM BICARBONATE 3 PER CENT

Manufacturer.—Malt-Diastase Company, Brooklyn.

Description.—(a) Canned spray dried extract of malted barley and starch infusion; contains essentially maltose and dextrins.

(b) Same as (a) with 2 per cent added sodium chloride.

(c) Same as (a) with 3 per cent added potassium bicarbonate.

Manufacture.—(a) Diastatic barley malt of known diastatic power is crushed and admixed with gelatinized starch and water. The malt diastase is permitted to convert the starch at a definite temperature until a desired ratio of maltose and dextrins is obtained; the mixture is heated to boiling to stop diastatic action and coagulate precipitated protein and filtered to remove coagulated protein, fat and insoluble material. The filtrate is concentrated in "vacuum," decolorized with activated carbon, spray dried and automatically packed in tins.

Analysis (submitted by manufacturer).—

(a)	per cent
Moisture	2.2
Total solids	97.8
Ash	0.8
Fat (Roese Gottlieb method)	0.04
Protein (N × 6.25)	1.2
Reducing sugars as anhydrous maltose	53.7
Dextrins (by difference)	40.9
Acidity as lactic acid	0.2
Carbohydrates (by difference)	95.6

(b) and (c). Same as (a) excepting as changed by addition of 2 per cent sodium chloride and 3 per cent potassium bicarbonate, respectively.

Calories.—(a) 3.9 per gram; 111 per ounce.
(b) 3.8 per gram; 108 per ounce.
(c) 3.8 per gram; 108 per ounce.

Claims of Manufacturer.—Carbohydrate supplements for the general diet of infants and for invalids.

POLAND WATER

NATURAL SPRING WATER

Distributor.—Hiram Ricker and Sons, Inc., South Poland, Maine.

Description.—Spring water of very low mineral content and almost free from bacteria.

Collection and Bottling.—The Poland Spring is located in Androscoggin County, Maine, north of Portland. The immediate surroundings of the spring are red granite and are well cared for and sanitary. The temperature of the water, 5 C., is uniform throughout the entire year. The spring outlet is within a large granite building and is covered with a glass case to prevent contamination. The water flows by gravity to granite storage tanks and to the bottling plant through quartz, glass and silver pipes. The tanks are glass covered and all vents are metal gauze covered. The water is bottled by automatic filling and capping machines. The air in the bottling room is filtered. The bottles before use are immersed in strong alkali solution for from one and one-half to three hours and are carefully washed, rinsed, steamed, rinsed, steamed again and filled just as soon as cooled. The purity of Poland Water is regularly checked both chemically and bacteriologically.

Analysis (submitted by manufacturer).—

Sediment	None
Turbidity	None
Color	5.0
	Parts per million
Residue on evaporation	110
Ammonia nitrogen:	
Free	0.01
Albuminoid	0.01
Nitrogen as:	
Nitrites	0.002
Nitrates	0.36
Oxygen consumed	0.1
Chlorine	6.0
Hardness	5.8
Free carbon dioxide (CO_2)	12.0
Silicon (Si)	8.1
Iron (Fe)	0.1
Aluminum (Al)	0.5
Calcium (Ca)	9.7
Copper	none
Lead	none
Magnesium (Mg)	1.7
Sodium (Na)	5.1
Potassium (K)	1.5
Chlorine (Cl)	5.0
Sulphur (S)	3.2
Phosphorus (P)	trace

Micro-Organisms (submitted by manufacturer).—

Total bacteria per cc.:	
At 20 C.	11
At 37.5 C.	1
Acid colonies per cc.	0
Presumptive test for B. coli in 10 cc.	Negative
Confirmative test for B. coli	Negative
Bacillus coli in 50 cc.	None

Claims of Manufacturer.—A pure spring water of low mineral content and almost free of bacteria.

TAYLOR'S PRIDE LOAF
TAYLOR'S SANDWICH BREAD

Manufacturer.—Taylor's Bakery, Columbia, S. C.

Description.—White breads made by the sponge dough method (method described in THE JOURNAL, March 5, 1932, page 817); prepared from patent flour, water, sucrose, sweetened condensed milk, lard, salt, yeast, malt syrup and a yeast food containing calcium sulphate, ammonium chloride, sodium chloride and potassium bromate.

Claims of Manufacturer.—Conforms to the United States Department of Agriculture definition and standard for white bread.

FAIRWAY WHITE LABEL BRAND TOMATO JUICE

Distributor.—Twin City Wholesale Grocery Company, St. Paul, Minn., Minneapolis, Minn., and Fargo, N. D.

Packer.—The Loudon Packing Company, Terre Haute, Ind.

Description.—Pasteurized tomato juice with a small amount of added salt; retains in high degree the vitamin content of the raw juice; the same as Loudon Brand Tomato Juice (THE JOURNAL, June 25, 1932, p. 2289).

WHITE HOUSE NATURAL BROWN RICE

Manufacturer.—Standard Rice Company, Inc., Houston, Texas.

Description.—Brown rice with the natural bran.

Manufacture.—The rough rice from the fields is passed over "shakers" to separate out foreign material and dehulled between "shelling stones." The rice groat is separated from the hulls in special machines, air cleaned, heat or electrically treated for destruction of insect life, and automatically packed in wax-paper wrapped cartons.

Analysis (submitted by manufacturer).—

	per cent
Moisture	13.0
Ash	1.1
Fat (ether extraction method)	2.2
Protein (N × 5.95)	6.3
Crude fiber	0.9
Carbohydrates other than crude fiber (by difference)	76.5

Calories.—3.5 per gram; 100 per ounce.

Vitamins.—A fair source of vitamins A and G and a good source of B.

Claims of Manufacturer.—Contains the bran and nutritional values of natural brown rice.

ROTH'S WHITE HEARTH BREAD

(POPPY SEED TOPPING)

Manufacturer.—The A. Roth Baking Company, Newport, Ky.

Description.—A white hearth bread with poppy seed topping made by the sponge dough method (method described in THE JOURNAL, March 5, 1932, p. 817); prepared from patent flour, water, sucrose, yeast, salt, malt syrup, lard and a yeast food containing calcium sulphate, ammonium chloride, sodium chloride and potassium bromate.

Claims of Manufacturer.—Conforms to the United States Department of Agriculture definition and standard for white bread.

FAIRWAY WHITE LABEL EVAPORATED MILK (STERILIZED)

Distributor.—Twin City Wholesale Grocery Company, St. Paul.

Packer.—The Oatman Condensed Milk Company, Dundee, Ill.

Description.—This canned unsweetened evaporated milk is the same product as Oatman's Brand Evaporated Milk (THE JOURNAL, April 16, 1932, p. 1376).

"SWEET TOOTH" PATENT FLOUR BLEACHED

Manufacturer.—Black Bros. Flour Mills, Beatrice, Neb.

Description.—A moderately hard winter wheat patent flour; bleached.

Manufacture.—Selected dark Turkey red and hard winter wheat are cleaned, washed, scoured and milled by essentially the same procedure as described in THE JOURNAL, June 18, 1932, page 2210. Chosen flour streams are blended and bleached with nitrogen trichloride (one-ninth ounce per barrel).

Claims of Manufacturer.—For bread baking.

WHITE HOUSE BRAND CORN FLAKES

Manufacturer.—Standard Rice Company, Inc., Houston, Texas.

Description.—Cooked, flaked and toasted corn (free of germ and bran); flavored with sugar, salt and malt syrup.

Manufacture.—Corn hominy grits admixed with the formula quantities of sucrose, salt, malt syrup and water are placed in sealed steel drums and steam cooked. The cooked mass is cooled, broken into separate granules and dried to a moisture content suitable for their flaking between steel rolls. The flaked corn is toasted in revolving ovens, is passed over screens to remove fine material and packed in wax-paper wrapped cartons.

Analysis (submitted by manufacturer).—

	per cent
Moisture	7.3
Ash	3.4
Fat (ether extraction method)	0.5
Protein (N × 6.25)	9.0
Crude fiber	0.4
Carbohydrates other than crude fiber (by difference)	79.4

Calories.—3.6 per gram; 102 per ounce.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, MAY 27, 1933

PHYSICAL UNFITNESS IN STUDENTS

In his essay on the Prolongation of Life, Metchnikoff wrote, many years ago: "If hygiene was able to prolong life when it was little developed, as was the case until recently, we may well believe that, with our greater knowledge of today, a much better result will be obtained." This expectation has in part been realized; indeed, it has been said that to hygiene belongs without doubt the place of honor in modern medicine. Public hygiene, or preventive medicine, as it is more frequently designated, represents a sort of offensive warfare against the noxious agents of our environment. Governmental activities protect mankind in the mass at every turn. They are concerned with pure air, pure water, pure food and the menace of epidemic disease. It may be doubted, however, whether personal hygiene, the defensive branch of public health service, has made equally notable progress. Do men exercise adequately the powers that may be developed for the strengthening of the individual? Is the hygiene of nutrition and of activity, including the perfect balance of work, play and sleep, appropriately cultivated?

The skepticism that leads to these questions has repeatedly been exhibited of late by students of physical fitness. It formed the theme of an essay by Emerson [1] of Tufts College Medical School in Boston, who has made extensive observations on the youth of preparatory schools and colleges. He asserts that the physical unfitness of these groups was indicated by higher mortality risks, as shown by the medico-actuarial table, and by increased morbidity and lessened efficiency, as evidenced by failure to withstand the pressure of curricular and extracurricular activities. Further evidence of physical unfitness among underweight students was shown by the marked increase of physical defects, by the correlation of underweight and self rating in health, and by the greater number of faulty health habits. Furthermore, a checking up of twenty faulty health habits of 4,366 students at the time of their admission to college shows no improvement during the seven-year period 1924-1931. There is little difference between students from public high schools and those who prepared in private schools.

In formulating decisions of this sort, much depends on the selected criteria of health and fitness. Emerson lays stress on deviations from the standards of size that he has set up. He firmly avers that marked deviation from the optimal weight zone for any person cannot occur without an adequate cause; namely, either physical defects or faulty health habits. Emerson [2] ventures the following pronouncements: Increase in morbidity is evidenced by the fact that most of the sickness during college life occurs in two groups: respiratory diseases among the underweight and digestive disturbances among the overweight. Lowered resistance appears not only in relation to the incidence of diseases and of nervous disturbances but also in the failure to withstand the pressure of athletic training and of other extracurricular activities. Lessened efficiency is shown by the fact that the highest percentage of failures in preparatory school and college occurs in the seriously underweight and overweight groups. Further evidence of the significance of underweight is shown by the marked increase in physical defects and deformities [3] in this group and by the correlation of safety and danger zone weight to self rating in health.

There may be considerable debate as to the serious rôle assigned to what are called faulty health habits. In Emerson's judgment, the four leading faulty health habits, for each college class, with a single exception, were no rest periods, fast eating, irregular bedtime, and the habit of having no regular time for bowel movement. Emerson's study of the health of students in eight representative high schools and seven leading private schools shows conditions of physical unfitness closely approximating that found among students entering college. He further alleges that private schools equipped with physical plants, gymnasiums, play grounds, medical staffs, and special teachers of physical administration and dietetics, and with all conditions favorable for carrying out the present accepted health programs, show a greater degree of physical unfitness and a higher percentage of faulty health habits than do the high schools.

Such incriminations call for earnest consideration. The American school and college boy need not become the victim of hygienic indifference, if the current indictments are tenable. Part of the responsibility is placed on the shoulders of medicine. The chief obstacle to health work, Emerson claims, is the persistent idea that if a person is not sick he is well, which prevents the physician from entering the field of health in the same scientific spirit in which he meets the problems of disease. Because of the failure of present health programs as indicated by the extent of physical unfit-

1. Emerson, W. R. P.: Physical Unfitness in the Preparatory School, Am. J. Dis. Child. **44**: 509 (Sept.) 1932.

2. Emerson, W. R. P.: The College and Physical Fitness, Dartmouth Alumni Mag. **23**: 7 (March) 1931.

3. Emerson, W. R. P.: The Diagnosis of Health, New York, D. Appleton & Co., 1930, p. 30.

ness, the plea is made that medical training should be as efficient in the diagnosis of health as in that of disease. The physician, Emerson concludes, should become the leader and not the follower of lay workers in the field of health. He should become as much an authority in health as in disease. The technical part of physical fitness work, Emerson adds, is largely educational, but its supervision requires efficient training, which thus far has been given little place in medical teaching.

PROTEIN AND CALORIES

Much attention has been devoted in recent years to the problems of the food requirement at all ages and under the differing conditions of bodily activity that necessarily affect it. As a consequence there is widespread agreement as to energy needs. Concerning the factors governing the energy requirements of children, the reports of the White House Conference [1] point out that because energy is an old story and because rare instances have been discovered in which nutritional failure has resulted from the restricted choice of foods, even when total quantity was plentiful, there has been a tendency in some quarters to regard calories as of no further importance. It requires, the report continues, only the stress of some major calamity such as war or flood or an economic emergency, however, to revive the realization that supplying enough to eat to a population means a sufficiency of calories as well as that freedom of choice which is the everyday guaranty of quality (vitamins, minerals, amino acids).

The difficulties of formulating a warranted opinion about the desirable protein allowance in the diet are somewhat more formidable. Referring to children, Wait and Roberts [2] have remarked that this is so because there is no simple outward method of judging whether the protein ingested is too much or too little to meet the child's actual needs, as there is in the case of calories, with which a consistently excessive or deficient intake is reflected in gain or loss of body weight. It is true that normal growth will not occur on a deficient protein intake, but there is no way of knowing what constitutes normal growth in any one child. Moreover, so many other factors affect growth that failure to grow cannot be attributed solely to a protein deficit. On the other hand, Wait and Roberts conclude, protein in excess of actual needs is oxidized as fuel or stored as body fat the same as carbohydrate, but there is no way of knowing the amount so used.

In the case of adults, the protein requirement has been gaged in several ways. First of all, the dietary habits of many persons in apparent good health have been recorded and the protein intake estimated on the basis of this experience. Such a procedure assumes that the actual experience and customary habits of mankind are a good guide. A more scientific plan has been to make nitrogen balance studies on persons subsisting on regimens involving different levels of protein intake. An unduly low limit of nitrogenous intake soon betrays itself by failure of the body to maintain nitrogen equilibrium. From studies of the sort referred to it is possible, as Wait and Roberts point out, to arrive at the minimum intake necessary to maintain nitrogen equilibrium and positive nitrogen balance under given conditions. Here again, however, they add, it is difficult to determine the optimum amount required to keep the body in good condition year after year, or to ascertain the maximum amount the body can handle without ill results.

Balance studies are far easier to conduct on adults than on younger persons. For this reason, relatively few investigations on nitrogen balance have been made on children and almost none on adolescent girls of 12 or more years of age, and none of these definitely establish either minimum or optimum values. Recent researches [2] at the Department of Home Economics, University of Chicago, on more than fifty girls from 10 to 17 years of age living under their accustomed conditions and eating a freely chosen diet indicated that the protein intake varied directly with the energy intake. An average of 12.4 per cent of the calories consumed came from protein, and this close relation between protein and calories is further indicated. The girls consumed on an average 1.64 Gm. of protein per kilogram. The intake was definitely higher at the younger ages, amounting roughly to 2 Gm. at 10 and 11 years, 1.5 Gm. from 12 to 15 years, and 1.2 Gm. at 16 and 17 years. If one takes these results in connection with the studies of the few balances on normal children and the intake previously reported, Wait and Roberts are inclined to regard these values as tentative minimum standards until further balance experiments have determined more accurately the protein needs of childhood.

The common practice of providing from 10 to 15 per cent of the calories in the form of protein is therefore justified by this study. The simplicity of this method suggests its practical use, especially in providing for groups, when it is assured that ample calories are being consumed, and when there is no necessity for restricting protein to bare requirements. The results recall a war-time warning of the late Sir William M. Bayliss. It may be noticed, he [3] wrote in 1917, that chief stress seems to be laid in diet tables on the energy or calory value of the food. This is justified by the fact, already mentioned, that, if any reasonable kind of combination of foodstuffs is consumed, it will be found that, if taken in the amount necessary to afford the energy value, sufficient protein will be contained in it

1. Growth and Development of the Child: Part III. Nutrition, White House Conference on Child Health and Protection, New York, Century Company, 1932.

2. Wait, Bernice, and Roberts, Lydia J.: Studies in the Food Requirement of Adolescent Girls: III. The Protein Intake of Well Nourished Girls 10 to 16 Years of Age, J. Am. Dietet. A. 8: 403 (Jan.) 1933.

3. Bayliss, W. M.: The Physiology of Food and Economy in Diet, London, Longmans, Green & Co., 1917.

without further addition. Natural foodstuffs, even potatoes, contain more protein than is often supposed to be the case. Pure products extracted from parts of plants or animals, such as sugar or oil, are not likely to be made the sole articles of a diet. Bayliss put the matter thus: "Take care of the calories and the protein will take care of itself."

VITAMIN D AND WELL BEING

New problems in relation to the possible function of vitamin D in promoting bodily welfare continue to arise, despite the commendable progress of recent years. One concerns the uncertainty of the need of supplementing the diet with added vitamin D if it is liberally supplied with the appropriate mineral constituents, notably calcium and phosphorus. As long as there is a widespread impression of a possible shortage of the bone-forming elements under the current dietary regimens in this country, as Bernheim [1] has recently intimated, the effort to alter prevailing conditions will naturally persist. She ventures the assertion that general health is improved and recovery from disease aided when the optimum calcium supply and utilization are assured. Furthermore, Bernheim insists that utilization of calcium is ineffectual, even with a sufficient calcium intake, unless also the factors that control the absorption of calcium are adequate.

In the symposium on the present status of the knowledge of vitamins,[2] published a few months ago under the auspices of the American Medical Association, Clouse remarked that the question "Why does vitamin D increase mineral retention?" is often asked but so far has not been satisfactorily answered. Since both calcium and phosphorus are excreted largely through the intestinal wall as well as through the kidney, it is difficult, if not impossible, to say whether the increased retention is due to an increased absorption of mineral or to a decreased excretion. A third possible factor might be the deposition of greater amounts of calcium and phosphorus in the bones. Probably the vitamin exerts its influence not in any one direction but to some extent in all three directions.

In new studies on animals that were subjected over long periods to extreme calcium deprivation, Templin and Steenbock [3] of the University of Wisconsin found that the introduction of moderate amounts of vitamin D into the calcium-deficient ration provided considerable protection from mineral losses in a parallel series of rats. Only about 6.5 per cent of ash was lost from the femurs. These losses present considerable improvement over the 10 per cent losses experienced in the absence of such supplementation. The condition of the rats was otherwise improved by the presence of vitamin D. Weight losses were greatly reduced, the calcium content of the blood serum was increased, and the parathyroids were maintained almost normal in size.

Such results tend to support the impression of the value of vitamin D as a food constituent for the adult. When the vitamin is supplied in moderate amounts in connection with either a high calcium-low phosphorus rachitogenic ration or a low calcium-low phosphorus ration, calcium and phosphorus are conserved to a remarkable degree. The Wisconsin biochemists frankly insist that it is unwarranted to expect that vitamin D administered in any amount should be able to compensate fully for an extreme lack of calcium or other dietary essentials. As the basal diet was not optimal with respect to protein or phosphorus content, it is possible that the favorable effects of vitamin D on calcium conservation might have been accentuated if the diet had been improved in these respects also. This is equivalent to the much needed reminder that vitamins are by no means the sole essentials for a healthful diet.

1. Bernheim, Alice R.: Calcium Need and Calcium Utilization, J. A. M. A. **100**: 1001 (April 1) 1933.
2. The Vitamins, Chicago, American Medical Association, 1932.
3. Templin, Vera M., and Steenbock, Harry: Vitamin D and the Conservation of Calcium in the Adult: II. The Effect of Vitamin D on Calcium Conservation in Adult Rats Maintained on Low Calcium Diets, J. Biol. Chem. **100**: 209 (March) 1933.

Current Comment

URINARY AMMONIA

The body is an acid-producing mechanism. The oxidation of the carbon of the foodstuffs yields carbonic acid, and the metabolism of the sulphur and phosphorus of proteins results in sulphuric and phosphoric acids. Despite the constant formation of these acids, the acid-base balance of the body is so nicely regulated that during health the reaction of the organism remains remarkably constant at about p_H 7.4. One of the noteworthy contributions of biochemistry has been the demonstration of the mechanisms involved in maintaining the acid-base equilibrium. Thus the buffer systems of the body fluids act as a prompt though necessarily temporary defense against the increase in acidity; the ultimate removal of acid occurs through the lungs, kidneys and skin. Obviously there is a constant effort to conserve fixed base. The lungs excrete free carbonic acid; the sweat glands of the skin secrete lactic acid, to a considerable extent uncombined with base, and the kidneys, in addition to conserving base through a shift in phosphates, have the remarkable ability to supplant fixed base in excreted salts with ammonia. It has long been known that urinary ammonia, formed in the kidneys, increases when the need for removal of acid is accentuated. Indeed, an increased concentration of the so-called endogenous base has been taken as matter of fact to indicate acidosis. The ammonia in the urine arises from the urea; there exists a reciprocal relationship between these two nitrogenous compounds. What is the factor that governs the magnitude of the change of urea to ammonia? One naturally turns to the presence of elevated concentrations of metabolic acid as the most obvious cause. That this is not likely was pointed out in 1929 by Oard and Peters [1] on the basis of their

1. Oard, H. C., and Peters, J. P.: J. Biol. Chem. **81**: 9 (Jan.) 1929.

own studies and those of others on the alleged acidosis of pregnancy. The carbon dioxide and serum albumin concentrations are low with accompanying decrease in total base. Under these conditions a larger than normal proportion of total base in the urine is present as ammonia. That the available fixed base in the body is the primary factor in controlling the ammonia output in the urine is thus indicated. Further corroborating evidence is furnished in the observations of Brooke and Smith [2] on experimental animals maintained on rations extremely poor in total base. Under these conditions as much as 95 per cent of the base in the urine was accounted for by ammonia, whereas the value in normal control animals was less than 8 per cent. The importance of the proportion of the components of buffer systems has been emphasized because the strikingly constant p_H of the blood depends on it; these studies point out a sensitive mechanism in the kidney that is apparently responsive to the quantity of base in the buffer combinations in the circulation.

Medical Economics

PRIVATE GROUP PRACTICE

[This is the second part of a series of investigations conducted by the Bureau of Medical Economics of the American Medical Association. The first part was published in THE JOURNAL, May 20.]

Every attempt to study private medical groups has been confronted with the almost impossible problem of defining the singularly elusive, changing and indefinite characteristics of a group or even of giving it a name. The name most frequently used by the medical groups themselves and those discussing them is "clinic," but this title has been so generally applied to another also somewhat indefinite, and even more common, type of medical practice, that it has been thought better to use the more general inclusive term of "group." [1]

"Group" in this study designates three or more physicians who have joined for practice and who own certain kinds of equipment aside from office space and employ lay assistants in common. It is frankly admitted that this description is as indefinite as the object defined. The fact is that in almost every case the decision as to whether any particular group should be included has had to be made after a study of all available details as to organization and operation.

The study conducted by the Committee on the Costs of Medical Care [2] gives the following definition:

> The private group clinic, for the purpose of this analysis, may be defined by several characteristic features—professional, financial, and administrative. (1) Its physicians, engaged in cooperative and contiguous medical practice, use many facilities in common, particularly office space, laboratories, and medical equipment. (2) Its physicians—all or most of them—are associated with the clinic on a full-time basis. (3) Its services include two or more medical specialties, and an attempt is usually made to hold available complete facilities for the patients accepted by the clinic, although some groups avowedly exclude from their services such specialties as obstetrics, ophthalmology, or dentistry. (4) Its patients are the responsibility of the entire group, not merely of individual physicians, although when consultations and special diagnoses are not required, one practitioner may alone treat a given case. (5) Its income is "pooled," and its practitioners have little or no direct financial relationship with patients. (6) Its members determine individual incomes by contract among themselves, rather than directly from their services to patients. (7) Its administration is carried on by a business man, rather than a physician, as far as non-medical matters are concerned. (8) Its credit investigations and collection policies are the specialized functions of a business manager rather than the incidental concerns of the several practitioners.

Considerable difficulty was found in strictly applying these qualifications to actual groups. The third qualification as to "medical specialties" and "complete facilities" would require a very liberal interpretation of these terms and of the word "attempt," and a membership much larger and better organized in these respects than was required for admission even to the study based on this definition. The fourth one conflicts with the general claim made by perhaps a majority of the groups that individual relations and responsibility are maintained between physicians and patients. The fifth and sixth features make financial arrangements the fundamental characteristic. Moreover, the wide variety of such arrangements, in which only certain portions of the income are "pooled" and in which the division of income varies in almost every imaginable way, not only makes this test difficult of application, but would include every partnership in which all transactions with patients are not on an exclusively individual basis. The seventh qualification is also too indefinite for application. Would it exclude the group using a woman secretary or even one of its medical members, who was believed to possess exceptional business ability? How many and what phases of "administration" must be handled by a business man? The same difficulties are found with the final qualification as to "credit investigations and collection policies."

This difficulty of definition is due to the extreme indefiniteness of the thing to be defined, which perhaps can be best illustrated by the steps which were taken to determine which groups should be included as proper subjects for this study. A preliminary questionnaire, sent to all secretaries of county medical societies, was answered by 1,949 secretaries, who listed over 500 organizations which they considered as coming under the classification of group practice. Additional lists from other sources raised the number to 724.

It has been argued that "the closed staff hospital is in effect a group clinic," [3] and 1,165 such hospitals were listed by the Council on Medical Education and Hospitals of the American Medical Association. An effort was made to ascertain which of these possessed characteristics which required their inclusion within this study, although no special circularization of these was made. A questionnaire was sent either to the secretary of the county medical society or directly to each of the approximately 700 groups reported. When a reply was not received from the secretary the questionnaire was sent directly to the group. An examination of the replies with accompanying correspondence showed that, with few exceptions, if the secretary was not a member of the group he either gave the questionnaire to the group or verified his reply by personal consultation of the members. The information on these questionnaires was then used as a basis for deciding whether the group should be included. In making this decision due attention was given to the standards set up by previous writers on the subject, including those already discussed. A minimum membership of at least three was required, although this excluded many associations of two physicians which had adopted some such name as "clinic," shared ownership in somewhat extensive equipment, "pooled" the income according to fixed provisions, had a "business manager" and in other ways seemed to fit the qualifications.

That the superior publicity value of some such a title as "clinic" has been generally recognized and adopted for competitive purposes without any attempt to conform to any definite standards is clear. One investigator of this type of practice said: [4]

> . . . there were found "organizations" designated as "group clinics" which on very slight investigation were found to be merely a trade name for the office of an individual physician who might have one or two assistants. A more worthy example listed among group clinics was found to be simply an association of two physicians sharing the expense of office facilities.

So-called "diagnostic clinics," the main function of which is to do laboratory and other work for outside practitioners, were excluded. No closed staff hospital was included unless the staff operated as a more or less organized group in private practice outside the hospital. Groups that appeared to be

2. Brooke, R. O., and Smith, A. H.: J. Biol. Chem. **100**: 105 (March) 1933.

1. Davis, Michael M.: Clinic or Dispensary, Which? Mod. Hosp. **26**: 119 (Feb.) 1928.

2. Rorem, C. Rufus: Private Group Clinics, Washington, D. C., Committee on the Costs of Medical Care, 1931, pp. 11-12. For another descriptive definition see Klotz, W. C.: Coordinated Effort Brings Better Service, Mod. Hosp. **29**: 79 (Oct.) 1927.

3. Sloan, E. P.: The Group Clinic, Illinois M. J. **55**: 395 (June) 1929.

4. Klotz,[2] p. 77.

primarily the industrial departments of a single industry were also excluded. The fact that many groups were changing form even while under observation made certainty of classification more difficult.

Letters and questionnaires brought information showing that about half of the 700 reported groups did not conform to a

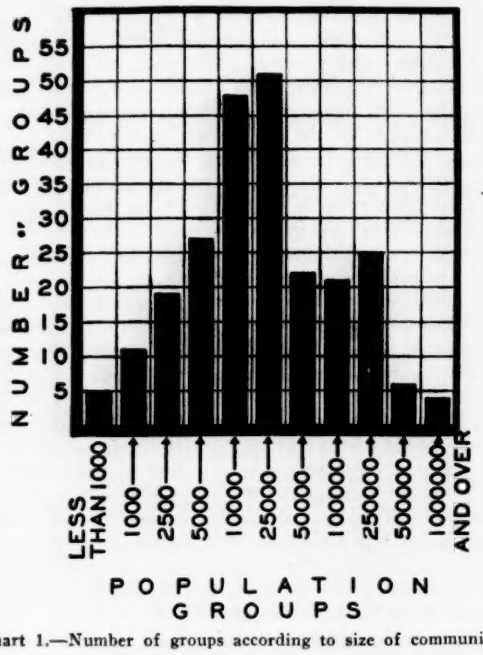

Chart 1.—Number of groups according to size of community.

sufficient number of the standards that had been set up to entitle them to inclusion in this study, although, as already mentioned, many of these called themselves "clinics" and were so considered in their localities. Many of these were partnerships of only two physicians or, if composed of a larger number, had little in common beside a reception room and telephone service.

From all the information received it was determined that there are over 300 groups in the United States that would come within the classification fixed by these standards. Of these, 239 filled out the questionnaire in a sufficiently complete form to make it available for study. That not only is this a fair sample but that no appreciable change would be produced in any of the conclusions by returns from those not replying is shown by the fact that an analysis of the first 100 received gave results as to averages and similar computations almost identical with those derived by more than doubling the number.

Although the Mayo Clinic cooperated fully in the study and furnished complete information it was decided that, owing to its wholly unique character, its inclusion would distort all conclusions. Morever, the organization and operation of this clinic has been so frequently and adequately described elsewhere as to make any discussion that could be given here superfluous.

GEOGRAPHIC DISTRIBUTION

One or more groups were reported from each of thirty-seven states, showing a very wide dispersion of this form of medical organization. The states from which no groups were reported were Connecticut, Delaware, Idaho, Maine, Maryland, Nevada, New Mexico, Rhode Island, South Carolina, Vermont and Wyoming. The states reporting ten or more groups were Texas, twenty-seven; Wisconsin, twenty-three; Minnesota, eighteen; California, seventeen; Indiana, thirteen; Illinois, eleven, and Washington, eleven. An analysis of the distribution according to the size of the cities shows at once that this form of practice offers no contribution to the problem of metropolitan medical service. Nearly 50 per cent of the groups are found in cities of less than 25,000 population, and over 67 per cent in those under 50,000, while a trifle over 4 per cent are located in cities above 500,000.

It is not easy to determine the reasons for this concentration of 67 per cent of the groups in cities under 50,000 with but 21 per cent of the population. Even if the rural population dependent on these smaller cities is included, the disproportion is great.

Some suggestions as to the reasons for group formation appeared in the answers to the first questionnaire by secretaries of county medical societies. An effort to supply a lack of laboratory and hospital facilities was the avowed motive back of the formation of several groups in the smaller cities. Such a motive is not felt by the individual practitioners in the large cities with ample and easily accessible hospital and laboratory services. The very existence of extensive hospital, clinic and outpatient services provides medical care for many who, in a smaller place, would patronize a group.

Another possible element is the closer association of physicians in a small city. Groups are formed quite largely of personal friends, who have already been somewhat closely associated professionally. They have been referring patients to each other, and association in a definite group is often little more than formal recognition and systematic arrangement of previous informal relations.

In a large city the well known physician, particularly the specialist, builds up his own clientele and establishes relations with a large number of his confrères. The formation of a group, which could not include all those with whom he had such relations, would limit rather than extend his influence and his income.

The publicity and prestige which accompany the formation of a group in a city of less than 50,000 population, where such publicity depends so much on word of mouth dissemination, is more conspicuous than in a metropolis, where the prestige of certain individual practitioners is apt to be greater than that of a group which lacks any especially outstanding personalities. A metropolitan group, deprived of this inherent local

TABLE 1.—*Number of Groups by States and Population of Locality*

	>1,000	1,000 to 2,499	2,500 to 4,999	5,000 to 9,999	10,000 to 24,999	25,000 to 49,999	50,000 to 99,999	100,000 to 249,999	250,000 to 499,999	500,000 to 999,999	1,000,000	Total
Alabama	..	..	..	..	3	..	..	..	..	..	..	3
Arizona	..	..	..	..	..	6	..	..	..	..	..	6
Arkansas	..	..	1	..	1	..	2	..	..	..	..	4
California	..	..	2	3	2	3	1	2	..	1	3	17
Colorado	..	..	..	1	1	..	2	..	1	..	..	5
Florida	..	..	..	..	1	..	..	2	..	..	..	3
Georgia	..	..	..	..	..	..	3	..	..	..	..	3
Illinois	..	..	..	3	5	1	2	..	..	..	..	11
Indiana	2	..	..	1	1	4	2	2	1	..	..	13
Iowa	..	1	2	..	..	2	..	1	..	..	..	6
Kansas	..	1	..	..	5	1	..	1	..	..	..	8
Kentucky	..	..	..	1	..	1	..	..	..	..	..	2
Louisiana	..	..	..	..	..	1	1	..	..	..	..	2
Massachusetts	..	..	..	..	..	..	..	..	..	1	..	1
Michigan	..	1	1	..	1	..	1	1	..	..	1	6
Minnesota	1	1	2	4	3	..	..	1	6	..	..	18
Mississippi	..	..	2	..	2	1	..	..	..	..	..	5
Missouri	..	..	..	1	..	..	..	..	..	1	..	2
Montana	..	..	..	2	1	2	..	..	..	..	..	5
Nebraska	..	2	..	1	2	..	2	..	..	..	..	7
New Hampshire	..	..	1	..	..	..	..	..	..	..	..	1
New Jersey	..	..	..	1	..	..	..	..	1	..	..	2
New York	..	..	..	1	..	1	..	..	..	..	..	2
North Carolina	..	..	..	..	1	2	2	..	..	..	..	5
North Dakota	..	..	..	2	1	1	..	..	..	..	..	4
Ohio	..	..	..	..	..	1	..	..	2	3	..	6
Oklahoma	..	..	..	..	3	2	..	2	..	..	..	7
Oregon	..	..	..	..	..	4	..	..	..	..	..	4
Pennsylvania	..	..	..	..	1	..	1	..	..	..	..	2
South Dakota	..	..	2	..	6	..	..	..	..	..	..	8
Tennessee	..	..	..	1	..	..	..	..	1	..	..	2
Texas	..	1	2	3	5	4	..	4	8	..	..	27
Utah	..	..	..	1	1	..	..	3	..	..	..	5
Virginia	..	..	..	..	..	1	..	1	..	..	..	2
Washington	..	..	..	..	1	4	..	1	5	..	..	11
West Virginia	..	..	..	..	..	..	1	..	..	..	..	1
Wisconsin	2	4	4	1	1	9	2	..	..	..	..	23
Totals	5	11	19	27	48	51	22	21	25	6	4	239

publicity can secure an equivalent prominence only by some form of more or less direct advertising, a fact which removes from ethical practitioners one of the incentives to form a group.

AGE AND GROWTH

Any attempt to determine the rate of growth is met with an almost complete lack of information as to the mortality rate of groups. It is certain that a considerable number of groups

have been dissolved or have failed. The results of an effort to ascertain the reasons for such disappearances are given later, but all attempts to secure sufficient data to determine the average length of life or the annual rate of dissolution resulted in too meager returns to justify any conclusions as to rate of growth. Any such conclusions, therefore, must be drawn almost wholly from the dates of founding of existing groups. This manifestly gives an exaggerated picture of the rate of growth, since it is probable that the mortality rate remains much the same each year and that, accordingly, a larger percentage of those now operating were formed in recent years than of those established at an earlier period.

Bearing this consideration in mind, it is noteworthy that only eighteen of the reporting groups were founded prior to 1912, in which year nine more of those now existing were established. The founding of groups is closely influenced by general economic conditions. There are peaks in the "prosperity" periods, 1918-1920 and 1927-1929, and corresponding declines in the "depression" years that followed.

When the cumulative totals for each year were plotted on a logarithmic scale, the line showing the rate of growth rose faster from 1914 to 1920 than the general trend. Since 1920 it has risen slower than the general trend. This would seem

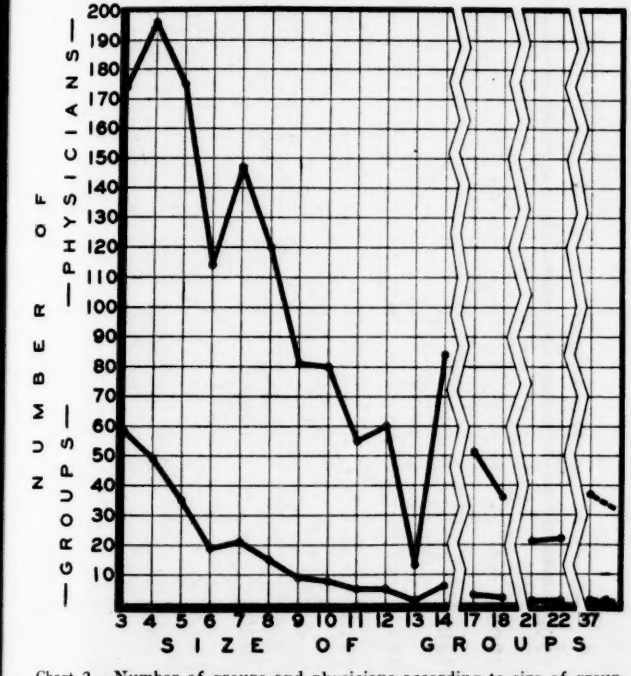

Chart 2.—Number of groups and physicians according to size of group. Upper line, physicians. Lower line, number of groups.

to indicate a slowing up in the rate of growth, a conclusion that receives further support from the opinions of a majority of the secretaries of county medical societies.

Since the fact of this slowing of the rate of increase is by no means certain and, if it does exist, may be a temporary phenomenon owing to special industrial conditions, it is probably too early to discuss its causes. But it may be suggested that the extension of laboratory and hospital facilities and the growth of outpatient departments with free and pay clinics may be setting limits to further extensive growth of private groups.

SIZE OF GROUPS

There were 239 groups that reported the number of physicians included. These had a total membership of 1,466 physicians and 96 dentists, an average of 6 physicians to a group. The median of membership falls between five and six members, and the average is, as just stated, six. Less than 13 per cent of the groups have ten or more members, and these include but 30 per cent of the physicians in group practice, while 37 per cent of the physicians are found in groups with a membership of five or less.

Do the groups tend to become larger? This question may be put in two ways: 1. Have the older groups tended to grow to greater and greater size? 2. Are the groups formed in recent years including a larger number of physicians? It is impossible to give a positive answer to either of these questions, but an analysis of the size of groups by years gives a strong suggestion of probable trends in these respects. If there is any general and regular tendency for groups to grow

TABLE 2.—*Number of Members According to Size of Group*

Number in Group	Number of Groups	Total Physicians in Groups of Size Given	Per Cent of Total	Cumulative Percentage
3	58	174	12	12
4	49	196	13	25
5	35	175	12	37
6	19	114	8	45
7	21	147	10	55
8	15	120	8	63
9	9	81	6	69
10	8	80	5	74
11	5	55	4	78
12	5	60	4	82
13	1	13	1	83
14	6	84	6	89
17	3	51	3	92
18	2	36	2	94
21	1	21	1	95
22	1	22	2	97
37	1	37	3	100
	239	1,466		

by the addition of new members, one should expect to find the largest groups among those first established. Of 38 groups with 212 members formed prior to 1916 only 1 has at present more than 10; only 2 others have as many as 10 members and the average membership is 4.6. With 1916 a period of rapid growth began that reached its peak in 1920, when 22

TABLE 3.—*Size of Groups by Year of Formation*

Year	Number of Physicians in Group																Totals	
	3	4	5	6	7	8	9	10	11	12	13	14	17	18	21	22	37	Groups	Phys.
1890	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	8
1891	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
1892	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	9
1893	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
1894	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
1895	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	5
1896	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
1897	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
1898	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	2	13
1899	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
1900	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	2	11
1901	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
1902	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	8
1903	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	4
1904	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	3
1905	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	2	11
1906	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
1907	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
1908	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	3
1909	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
1910	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	2	20
1911	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	2	10
1912	3	..	2	1	2	..	..	1	..	..	..	..	..	..	..	..	..	9	49
1913	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	4
1914	1	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	3	16
1915	2	2	..	1	..	1	..	1	..	..	..	..	..	..	..	..	..	7	38
1916	..	..	1	..	1	..	..	1	1	..	..	1	1	..	..	..	..	6	64
1917	1	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	3	16
1918	..	1	2	3	..	1	..	..	..	..	..	..	..	..	..	1	..	8	62
1919	..	1	2	2	2	..	1	..	..	1	1	1	..	..	..	..	..	11	88
1920	3	5	5	2	2	1	..	1	1	2	..	..	..	..	..	..	..	22	133
1921	4	..	1	..	1	1	..	..	..	..	..	2	1	..	1	..	..	11	98
1922	1	3	2	1	1	..	1	..	..	..	..	..	..	..	..	..	..	9	47
1923	2	3	1	..	1	1	..	..	..	..	..	..	1	..	..	..	..	9	55
1924	..	2	..	2	2	..	..	..	..	1	..	1	..	1	..	..	..	9	78
1925	3	3	2	..	1	2	..	..	1	..	..	..	..	..	..	..	..	12	65
1926	3	3	1	2	1	..	1	1	..	..	..	..	..	..	..	..	..	12	64
1927	2	2	4	..	1	..	1	1	..	..	..	..	..	..	..	..	..	11	60
1928	5	5	3	1	2	1	1	..	..	..	..	..	..	..	..	..	..	18	87
1929	9	6	1	1	2	1	..	..	..	1	..	..	..	..	..	..	1	22	133
1930	4	2	1	..	..	2	..	1	..	..	..	..	..	..	..	..	..	10	51
1931	6	1	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	10	38
1932	3	3	..	..	1	..	2	..	..	..	..	..	..	..	..	..	..	9	46
	55	48	34	18	22	15	9	7	3	6	1	5	3	1	1	1	1	230	1,397

groups comprising 133 members were organized, after which the annual growth declined to 9 groups with 78 members, in 1924. The total number of groups formed in this period of nine years was 88, with a total present membership of 641, or an average of 7.3 members per group. Beginning in 1925 there was another period of accelerated increase, reaching, in 1929, the same peak of 22 groups having 133 members and ending again with 9 groups and 78 members in 1932. The

total number of groups formed in this period of eight years was 104, with a membership of 544, an average of 5.2 members per group. This would certainly seem to indicate that the size of groups has been decreasing since the first period of rapid growth. When it is also considered that the population of the United States increased from 105,710,620 in 1920 to 122,775,046 in 1930 and the number of physicians from 145,404 in 1921 to 156,440 in 1931, it does not appear that the percentage of physicians entering group practice has increased during recent years. This conclusion is strengthened by the fact that if the mortality rate among groups has remained anywhere near constant the percentage of groups

TABLE 4.—*Running Average Size of Groups for Five Year Periods*

Year	Average No. of Members
1916	6.57
1917	6.90
1918	7.25
1919	7.65
1920	7.26
1921	7.21
1922	7.01
1923	6.79
1924	6.85
1925	6.86
1926	6.05
1927	6.07
1928	5.70
1929	5.45
1930	5.41
1931	5.19
1932	5.14

organized in the period 1916-1924 which have since disappeared must be greater than the corresponding percentage for the more recent period 1925-1932.

There is a well established statistical method of determining whether an apparent trend is consistent. This is the method of "running averages," by which the figures are grouped in regular intervals with the earliest year in the group dropped and an additional year added for each computation. The use of this method with groups of five, the first group ending in 1916, gave the results shown in table 4.

Here is an unmistakable trend line showing that according to year of formation the groups reached their peak as to size in the years 1918 to 1921 and have been steadily diminishing ever since.

This average is considerably modified by the presence of a single group, with thirty-seven members, organized in 1929, which differs quite widely in nearly all its characteristics from any other organization. It is primarily a "voluntary health insurance plan," and is so designated in a study made by the Committee on the Costs of Medical Care. If this single organization is omitted from the table, the last four cumulative averages would be as follows:

1929	5.0
1930	4.9
1931	4.7
1932	4.0

Standing alone, any one of these tests would probably be inconclusive, and if any one contradicted the others it would raise a doubt. But when all give the same reply there is every reason to say that so far from following the industrial trend toward greater and greater size, groups have for several years been growing smaller.

FORM OF ORGANIZATION

While there are individual variations in detail, the organizations are of three general types: partnerships, corporations and individual ownership. By far the largest number are partnerships. Of 227 replying to the question on the form of organization, 140 were partnerships, 45 corporations and 42 individually owned. It is difficult to secure any conclusive evidence of any tendency of one of these forms to supplant either or both of the others. There were two decades in which the progress of group formation was exceptionally rapid —from 1912 to 1921 and from 1922 to 1931, inclusive. Of the groups formed in the first period, eighty-two were reported as now in existence. Of these, 20, or a little less than one-fourth, are incorporated. In the second decade 123 were organized, of which 17, or a little less than one-seventh, were corporations. Even considering the probability that the corporate form has attained one of its objects, a lower mortality rate, it would still seem that any tendency that may exist is away from the corporate form.

SPECIALIZATION WITHIN GROUPS

The principal argument offered in urging the extension of group practice is that a group assembles in one place all the essentials required for complete diagnosis and treatment of the patient. It is claimed that a group consists of a sufficient number of adequately trained specialists to permit reference to whatever specialist may be necessary for proper diagnosis and treatment. At least two writers have outlined what they consider the minimum composition of a group. The first,[5] after saying that "a minimum number should be at least four," added: "A surgeon, internist and E. E. N. & T. are indispensable. The fourth may specialize in x-rays and physiotherapy, urology, laboratory, pediatrics or other branches.

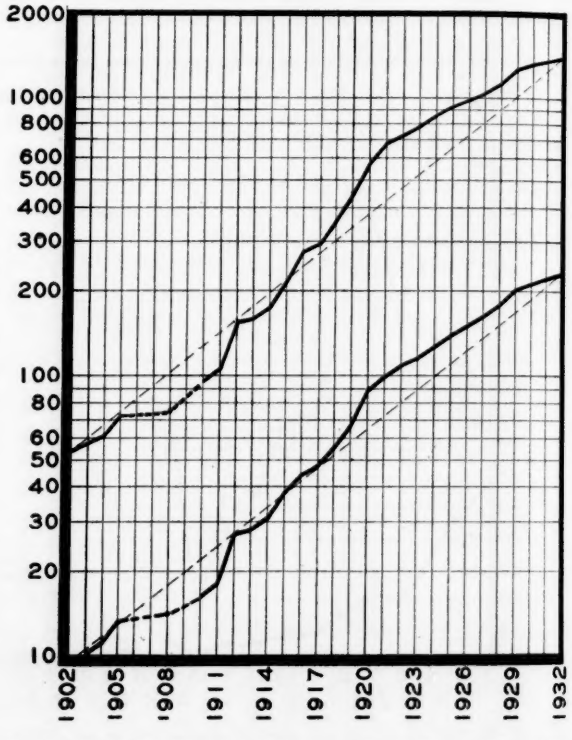

Chart 3.—Growth of groups by years. Upper line total number of physicians—lower line number of groups. Trend lines dotted.

Pediatrics is a happy choice, since this branch is most important and one of the most neglected in smaller communities." A somewhat higher standard is set by the other writer. "Every group should comprise, at least, an internist, a surgeon and a gynecologist, a pathologist, a roentgenologist, a urologist and proctologist, a specialist in eye, ear, nose and throat diseases, a dentist and a trained nurse."

Information as to the specialties practiced was furnished by 223 groups having a membership of 1,357 physicians and 90 dentists. The distribution of specialists within these groups as reported by the groups themselves is shown in table 5. When a physician reported that he practiced two specialties, each was counted as one-half. In the few instances when a claim was made that a physician practiced more than two specialties, all but the first two were discarded. The inclusion of these, with corresponding fractions, would not have materially affected the totals.

The table, as it stands, would appear to indicate a more minute subdivision and consequent inadequacy of representa-

5. King, D. D.: Group Practice in the Smaller Communities, Nebraska M. J. **10**: 220 (June) 1925.

tion in certain fields than it is perhaps fair to assume in the average group. There are certain specialties that are recognized as so closely related that their combination in the same person is not only possible but often desirable. These combinations have been made in table 6, which, accordingly, gives a fairer view of specialization among group members and the representation of the specialties in the various groups than is given by table 6.

TABLE 5.—*Classification by Specialists in 223 Groups*

Type of Practice	Complete Specialists	Partial Specialists*	Total
General practice	164	86	207
Surgery	266	95	313½
Internal medicine	195	56	223
Ophthalmology, otology, laryngology, rhinology	136	6	139
Pediatrics	55	41	75½
Roentgenology	45	36	63
Obstetrics	26	64	58
Urology	49	17	57½
Obstetrics and gynecology	30	4	32
Orthopedic surgery	29	1	29½
Otology, laryngology, rhinology	24	1	24½
Ophthalmology	23	..	23
Pathology	17	7	20½
Genito-urinary	15	11	20½
Diagnostician	8	15	15½
Gynecology	6	13	12½
Neurology	9	5	11½
Dermatology	5	6	8
Proctology	2	8	6
Laboratory	4	2	5
Physical therapy	2	6	5
Anesthesia	4	..	4
Tuberculosis	2	..	2
Laryngology, rhinology	1	..	1
Total number physicians	1,117	480	1,357
Dentists	90		90
Total	1,207	480	1,447

* Each counted as one-half in total.

TABLE 6.—*Condensed Classification by Specialists in 223 Groups*

Type of Practice	Number Groups Reporting This Type of Practice	Number Physicians Completely Limiting Their Practice to a Specific Type	Number Physicians Not Completely Limiting Their Practice to the Specific Type*	Total
General practice	106	164	86	207
Surgery	197	266	95	313½
Internal medicine	133	203	71	238½
Ophthalmology, otology, laryngology, rhinology	139	184	7	187½
Obstetrics and gynecology	109	62	81	102½
Urology	81	64	28	78
Pediatrics	81	55	41	75½
Roentgenology	76	45	36	63
Orthopedic surgery	26	29	1	29½
Pathology and laboratory	29	21	9	25½
Neurology	13	9	5	11½
Dermatology	11	5	6	8
Proctology	9	2	8	6
Physical therapy	8	2	6	5
Anesthesia	3	4	..	4
Tuberculosis	2	2	..	2
Total number physicians		1,117	480	1,357
Dentists	70	90		90
Total		1,207	480	1,447

* Each counted as one-half in total.

The first impression, which is confirmed by all further analysis, is that there is no general standard or typical make-up of groups. Although there are 313½ physicians specializing wholly or partially in surgery, only 197 out of 223 groups include one of these among its members; 238½ whole, or partial, specialists in internal medicine are found in 133 groups, and 207 general practitioners are members of but 106 of the groups, or less than one-half the total number. This does not indicate any tendency of groups to organize around general practitioners. The preponderance of surgeons raises the question of whether there may not be some justice in the charge sometimes made by critics of group practice that many groups are formed only to act as "feeders" for successful surgeons.

The fourth largest number of specialists are those dealing with conditions of the eye, ear, nose and throat. There are 184 complete and 7 partial specialists in this field, and they are represented in 139 groups. The fifth class as to size is composed of obstetricians and gynecologists, of whom there are 62 complete and 81 partial specialists, represented in 109 groups.

The number in each of the other specialties is too small to supply even a partial specialist to one half of the groups.

That there is no standard composition of groups and no such distribution of specialists among the groups as to make possible the assemblage, in any large percentage of the groups, of the specialists required for complete diagnosis and treatment is evident.

If one takes, for illustration, the 147 physicians found in groups with 7 members and attempts to arrange them to form

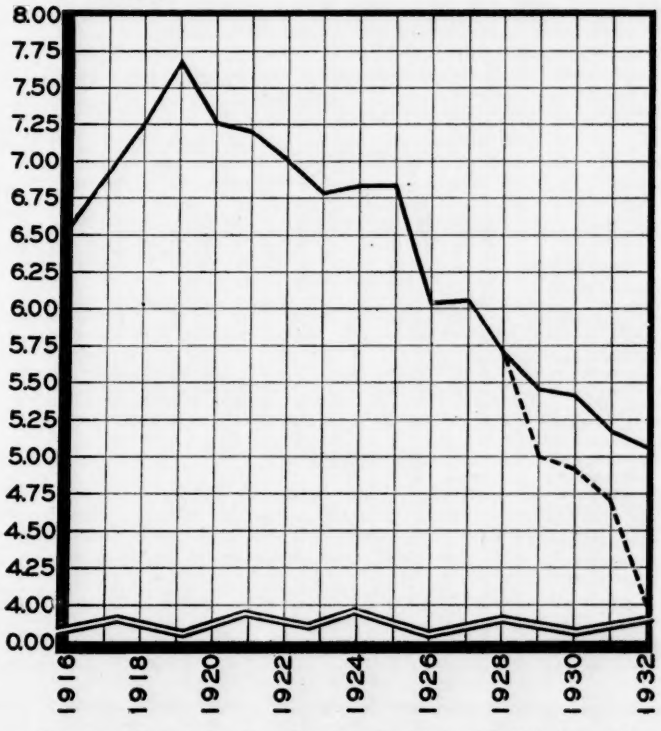

Chart 4.—Changes in size of groups by years. (Dotted line with omission of one group. See text.)

the 21 groups of this size it is at once apparent that it is impossible, even with completely unrestricted power, to distribute these physicians in such a manner as to form 21 groups capable of rendering a complete medical service.

This statement is not offered as a criticism of group practice but it is a refutation of the excessive claims that have been advanced for such practice, based on the supposition, contrary to the facts, that there is a standard type to which all groups approximate.

It is possible to form some judgments as to the qualifications of some of those reported to be practicing a specialty which entitle them to be classified as specialists. Among points that are generally considered to indicate such qualifications are whether the physician has recorded himself as a specialist for the American Medical Directory, which would at least indicate an intention to devote himself to the specialty. A second standard is membership in one or more of the societies composed of specialists.

Of the 266 complete and 95 partial specialists in surgery reported by various groups, the names of 313 were furnished, which made it possible to determine the extent to which they met these standards. Four of these could not be found in the

1931 directory, the latest edition. These are probably young physicians or those who have recently been licensed.

Of the remaining 309 there were 291, or 94 per cent, who were members and 211, or 68 per cent, who were Fellows of the American Medical Association. Two hundred and fifty-three of these were listed as specialists in some department of surgery and fifty-six as general practitioners. There were 166, or 54 per cent, who were members of 1 or more special societies and 143 who did not belong to any such society. Of these memberships, 164 were in the American College of Surgeons, 14 in the Southern Surgical Society, 9 in the Western Surgical Association, 5 in the American Surgical Association, 4 in the Pacific Coast Surgical Association, 4 in the New England Surgical Society, 2 in the Associated Anesthetists of the United States and Canada and 1 in the Society of Neurological Surgeons.

The next largest group of specialists which it is possible to classify in this manner is composed of those treating the eye, ear, nose and throat. Of 184 complete and 7 partial specialists in this field the names of 144 were given, of which there were 141 listed and 3 not listed in the 1931 directory. Of these 141, 139 were members and 101 Fellows of the American Medical Association. One hundred and sixteen are listed in the directory as specialists and twenty-five as general practitioners. Seventy-one are members of some special society and seventy hold no such membership.

There were forty-nine complete and seventeen partial specialists in urology. The names of fifty-eight of these were given, of whom fifty-four were members and forty-one Fellows of the American Medical Association. Fifty of these were listed as specialists and eighteen as general practitioners. Twenty-four were members of special societies and thirty-four held no such membership.

Owing to combinations and natural affiliations between the different specialties, which make any classification as to listing and special societies apt to be misleading, no attempt has been made to analyze these facts in regard to obstetricians, gynecologists and pediatricians. The number of specialists in other lines is so small that such an analysis would mean little.

There was a total of 1,079 physicians in group practice whose names were returned on the questionnaires. Of these, 1,019 were members and 719 Fellows of the American Medical Association, and only 60 nonmembers. Expressed in percentages, this would indicate that 94 per cent of the physicians in group practice are members and 66 per cent Fellows of the American Medical Association.

TABLE 7.—*Distribution of Specialists According to Size of Group*

Type of Practice	Size of Groups: 3 Complete	3 Partial	4 Complete	4 Partial	5 Complete	5 Partial	6 Complete	6 Partial	7 Complete	7 Partial	8 Complete	8 Partial	9 Complete	9 Partial	10 Complete	10 Partial	11 Complete	11 Partial	12 Complete	12 Partial	13 Complete	13 Partial	14 Complete	14 Partial	17 Complete	17 Partial	18 Complete	18 Partial	21 Complete	21 Partial	22 Complete	22 Partial	Total Complete	Total Partial	Total
General practice...	29	22	24	28	26	7	14	3	14	8	20	5	4	3	4	3	2	6	13	1	..	..	..	..	1	..	6	..	..	..	7	..	164	86	207
Surgery.....	34	21	41	22	30	12	25	5	21	9	26	5	19	1	13	5	7	3	10	2	2	..	13	4	10	3	9	..	1	3	5	..	266	95	313½
Internal medicine..	21	11	22	9	17	3	17	8	22	5	12	5	11	4	14	4	8	1	7	4	3	4	22	1	14	3	7	..	3	9	3	..	203	71	238½
O. A. L. R.	18	4	20	2	25	..	14	..	28	..	16	1	9	..	12	..	7	..	7	..	2	..	12	..	7	..	2	..	3	..	2	..	184	7	187½
Obstetrics and gynecology.....	4	17	6	12	7	7	6	7	5	6	5	6	3	4	7	3	4	2	4	3	..	..	6	4	2	6	1	..	1	4	1	..	62	81	102½
Urology.....	2	3	6	3	3	4	5	3	10	3	6	2	7	..	3	4	3	2	5	..	1	..	5	3	4	1	2	..	1	..	1	..	64	28	78
Pediatrics.....	8	7	5	9	4	6	8	2	4	3	3	3	2	3	4	1	4	3	2	..	..	..	4	2	3	2	..	..	2	..	2	..	55	41	75½
Roentgenology....	2	6	3	9	5	6	3	1	9	2	4	2	3	3	3	2	4	1	3	1	1	..	2	1	1	..	2	1	..	1	..	..	45	36	63
Orthopedic surgery	1	..	..	1	2	..	1	..	5	..	2	..	2	..	2	..	1	..	1	..	2	..	5	..	..	..	4	..	..	..	1	..	29	1	29½
Pathology and laboratory.....	..	..	1	2	..	..	4	..	6	..	1	1	1	2	4	1	2	..	..	..	..	..	1	1	1	..	..	1	..	1	..	..	21	9	25½
Neurology.....	..	..	..	..	1	1	..	1	..	..	2	..	1	..	..	1	1	1	1	1	..	..	3	..	..	..	..	..	..	..	..	..	9	5	11½
Dermatology.....	..	..	1	..	..	..	..	..	2	..	..	..	..	..	..	1	1	1	..	1	..	..	1	1	..	1	..	..	..	1	..	..	5	6	8
Proctology.....	..	..	..	1	..	3	..	2	1	..	..	..	..	..	..	1	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	2	8	6
Physical therapy..	..	1	..	..	..	1	..	..	1	..	..	..	..	..	1	..	..	1	..	1	..	..	..	1	..	..	..	..	..	1	..	..	2	6	5
Anesthesia.....	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	4	..	4
Tuberculosis.....	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2
Total.....	119	92	131	98	120	50	98	32	129	36	97	30	62	20	67	26	44	22	53	14	11	4	75	18	43	16	35	2	11	20	22	..	1,117	480	1,357
Number of groups	55		45		29		19		21		14		8		8		5		5		1		6		3		2		1		1				223

There was little reason to believe that the amount and character of equipment possessed is any accurate measure of the quality of the diagnosis and treatment given. This is not alone because some groups make wide and effective use of outside laboratory facilities such as are open to every physician in the locality. The real standard is determined by the way in which such equipment is used and combined with the ability of the practitioner using it, and this is something that does not lend itself to statistical measurement.

EQUIPMENT

Of the 239 groups that returned the questionnaire, 217 stated that the group owned, and 18 that they did not own, a laboratory, and 34 did not answer this question. Of the eighteen there were eight that said they used a laboratory in a hospital, which was usually owned or controlled by the group. Some of the others listed equipment owned by the group although they did not call the office a laboratory. Such equipment has been included in the totals.

There were 213 groups that stated they had roentgenologic equipment, 65 an electrocardiograph, 190 some material for physical therapy treatment and 192 apparatus for testing metabolism. Eighteen groups reported the possession of varying quantities of radium. It must be at once recognized that these bald enumerations are far from giving any accurate picture of the scientific equipment of medical groups. Comment accompanying these replies showed that there is the widest variation in the character of this equipment. Roentgen equipment, for instance, varies from the simplest single machine to a whole battery of several types, including those required for high voltage therapy and other radiant treatments. The variation is perhaps even wider in the department of physical therapy. Some groups have little more than a simple infra-red lamp, while others reported elaborate apparatus for all forms of treatment. It can only be said that these replies indicate that there is nothing approaching standardization in regard to the equipment required in group practice. Furthermore there is

OWNERSHIP OR CONTROL OF HOSPITAL

There are usually very close relations between the group and some one hospital, although a number of reports stated that all the local hospitals were used. Of 237 groups replying to the question regarding relations with hospitals 76 stated that the group or one of its members owned or controlled a hospital or, in a few cases the hospital corporation owned the group. Of the 161 groups which stated they did not directly own or control a hospital there were 22 in which all the members of the group were on the staff of some one hospital. Two reported that the group owned stock in a hospital, and another that the group had its offices in a hospital.

Since the latter comments were largely in the nature of volunteered information, it is probable that similar relations exist with many other groups that do not directly own or control hospitals.

FINANCIAL RELATIONS WITH PATIENTS

There were 225 groups that replied to the question, "Are patient's financial relations with group or with individual physicians?" Of these, 175 stated that such relations were with the group, 47 with individual physicians and 3 with both. These answers were modified by comments from those stating that relations were with the group to show that in nineteen groups there were certain financial relations with the individual physicians. Similar modifications indicated that in eight of the groups in which the relations were primarily with individual physicians certain charges, generally those for laboratory or industrial work, were handled by the group.

In order to ascertain whether the nature of these relations was determined by the size of the group, a further analysis was made of those groups in which the relations were with the individual physician. It was found that the average size of such groups was six and five-tenths, as compared with an average of six for all the groups covered by the study. Among these forty-seven were groups with fifteen, seventeen, twenty-one and twenty-two members. Their operation in all medical matters was in no way distinctive or different from those in which financial relations were with the group. Pooling of income and its distribution according to some arbitrary predetermined plan seems to have nothing to do with the question of the quality, method of giving or other characteristics of medical practice.

No tendency is apparent toward a general adoption of a policy of pooling or of retaining individual financial arrangements. Comparison of the dates of formation of the groups with individual relations show that these constitute about the same percentage of the total number at all times during the last twenty years.

(To be continued)

Association News

THE MILWAUKEE SESSION

Annual Meeting of Medical Veterans of the World War

The annual meeting of the Medical Veterans of the World War will be held at 9 p. m., Wednesday, June 14, at the Eagles Club, Milwaukee. There will be an informal smoker, reception and luncheon. Dr. Gilbert E. Seaman, 324 East Wisconsin Avenue, Milwaukee, is the chairman of the committee in charge of arrangements for this meeting. Members of the Association of Military Surgeons and all medical veterans of the World War, including physicians who served as medical advisers to government units and draft boards, are invited to attend.

University of Wisconsin Medical School Alumni Dinner

Alumni of the University of Wisconsin Medical School will have an old fashioned German dinner and reunion at the Wisconsin Club on Wednesday, June 14, at 6:30 p. m. All physicians who have been affiliated with the medical school for two or more years are invited to attend. Reservations should be made through Dr. Chester W. Long, 208 East Wisconsin Avenue, Milwaukee, as early as possible.

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Talks

The American Medical Association broadcasts on Tuesday and Thursday from 9:15 to 9:20 a. m., Chicago daylight saving time, which is one hour faster than central standard time, over Station WBBM (770 kilocycles, or 389.4 meters). The subjects for the week are as follows:

May 30. Holiday. No broadcast.
June 1. Pains and Pills.

There is also a fifteen minute talk sponsored by the Association on Saturday morning from 9:45 to 10 o'clock over Station WBBM. The subject for the week is as follows:

June 3. Allergy in Childhood: I.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Society News.—Dr. Charles Marshall Hamilton and Dr. Wilder Walton Hubbard, Nashville, Tenn., spoke before the Lauderdale County Medical Society, April 4, on diseases of the skin and pneumothorax in the treatment of tuberculosis, respectively.——Dr. Gerald G. Woodruff, Anniston, addressed the Calhoun County Medical Society, April 4, on "Blood Pressure in Pregnancy."——Dr. Andrew L. Glaze, Jr., Birmingham, was the principal speaker before the Madison County Medical Society, April 10, on eczema.——Dr. Ernest W. Goodpasture, Nashville, Tenn., gave an address at the University of Alabama School of Medicine, University, April 28, on "A Medical Pageant."——Dr. David S. Moore, Jr., Birmingham, has been elected president of the Alumni Association of the University of Alabama Medical School.——The Tuscaloosa County Medical Society and the student body of the University of Alabama School of Medicine were addressed, April 21, by Drs. John J. Shea and Ralph E. Semmes, Memphis, Tenn., on "Management of Fractures of the Bones of the Face" and "Head and Brain Injuries," respectively. A joint meeting of the society and the medical staff of the Veterans' Administration Faculty at Tuscaloosa, May 3, was devoted to presentation of cases. Included on the program were Drs. George L. Johnson, Herbert Caldwell, Joseph Rothman, George W. Kiehnhoff, James B. Berardi and Matthew T. Moorehead, Jr.

ARIZONA

State Medical Election.—Dr. Nelson C. Bledsoe, Tucson, was installed as president of the Arizona State Medical Association at its annual meeting in Tucson, April 20. Dr. Fred G. Holmes, Phoenix, was named president-elect and Dr. Delamere F. Harbridge, Phoenix, reelected secretary. The next annual session will be held at Prescott in April, 1934.

ARKANSAS

State Medical Meeting and Election.—At the annual meeting of the Arkansas Medical Society in Hot Springs National Park, May 2-4, Dr. Leonce J. Kosminsky, Texarkana, was installed as president, and Dr. Fergus O. Mahony, El Dorado, named president-elect. Other officers are Drs. Dewell Gann, Sr., Benton; James H. Fowler, Harrison, and John E. McGuire, Piggott, vice presidents; Dr. Royal J. Calcote, Little Rock, treasurer, reelected, and Dr. William R. Bathurst, Little Rock, secretary, reelected. The program consisted of addresses by the following physicians, among others:

Dean Lewis, Baltimore, Diagnosis of Bone Tumors.
Evarts A. Graham, St. Louis, Consideration of the Factors Influencing Mortality in Acute Empyema.
Darmon A. Rhinehart and William E. Gray, Jr., Little Rock, Importance of X-Ray Examination in Diagnosis of the Chest.
Jesse D. Riley, State Sanatorium, Antituberculosis Progress.
Herbert Fay H. Jones, Little Rock, Transurethral Prostatic Resection.
Charles S. Holt, and Frederick H. Krock, Fort Smith, Tragedies of Surgery.
Herbert Moulton, Fort Smith, Phases of Mastoid Disease.
Robert Caldwell and Royal J. Calcote, Little Rock, Enucleation: Indications and Contraindications.
Lucian H. Lanier, Texarkana, Value of Correctly Fitted Glasses in Modern Ophthalmic Practice.
Lowry H. McDaniel, Tyronza, Observations on Pellagra.
Philip F. Barbour, Louisville, Ky., Chorea.
Henry H. Turner, Oklahoma City, Hormones of the Anterior Pituitary.
Shelbey B. Hinkle, Little Rock, Birth Injuries.
Grayson E. Tarkington, Hot Springs, Evaluation of the Swift-Ellis Therapy in the Treatment of Neurosyphilis.

CALIFORNIA

Decrease in Infant Mortality Rate.—There were 4,125 infant deaths in California in 1932 as compared with 4,609 in 1931, giving a rate of 52.8 per thousand live births as compared with an earlier rate of 56.5. Lower infant mortality rates prevailed among all races except Indian, Chinese and Japanese. The rate for white infants fell from 41.8 in 1931 to 40 in 1932. The death rate for Negro infants fell from 74.2 in 1931 to 58.6 in 1932. The rate among Mexican infants fell from 127.1 in 1931 to 118.9 in 1932. This decrease was probably influenced by the extensive migration of Mexicans to their mother country, the California department of health bulletin stated.

Lectures on Heart Disease.—The prevention and relief of heart disease was the theme of an institute recently conducted in San Francisco by the San Francisco Heart Committee of the local county medical society. The lectures were arranged for public health nurses, physical education teachers and medical social service workers and were sponsored by the department of public health, the physical education department of the board of education and the Cardiac Center of the American Association of University Women. Speakers included Drs. Walter H. Brown, on "Heart Disease a Public Health Problem"; Clain F. Gelston, "Heart Disease in Infancy (Birth to Five Years)"; John J. Sampson, "Prevention and Care of Heart Disease During Childhood and Adolescence (Six to Twenty Years)" and John P. Strickler, "Heart Disease in the Adult." The total attendance was about 1,000.

State Medical Meeting and Election.—Dr. George G. Reinle, Oakland, was installed as president of the California Medical Association at the annual meeting, April 26. Dr. Clarence G. Toland, Los Angeles, was named president-elect, and Dr. Emma W. Pope, San Francisco, was reelected secretary. The next annual session will be held at Riverside. Among the speakers on the program were the following physicians:

Ray Lyman Wilbur, Stanford University, Medicine at the Crossroads.
Arthur C. Christie, Washington, D. C., Significance to the Medical Profession of the Report of the Committee on the Costs of Medical Care.
Rosco G. Leland, director, Bureau of Medical Economics, American Medical Association, Chicago, New Forms of Medical Practice.
Cyrus C. Sturgis, Ann Arbor, Mich., Nature of Pernicious Anemia and a Consideration of Recent Advances in the Treatment of the Disease.
Harvey B. Stone, Baltimore, Living Grafts of Endocrine Glands.
Louis H. Maxson, Seattle, Spinal Anesthesia Technic, Records and Results.
Gershom J. Thompson, Rochester, Minn., Surgical Treatment of the Prostate.

COLORADO

Changes in Faculty.—The following changes in faculty at the University of Colorado School of Medicine, Denver, have been recently reported:

Dr. George S. Johnson, appointed as associate professor of psychiatry and neuropathology.
Dr. Paul H. Guttman, appointed as assistant professor of pathology.
Drs. Ralph W. Danielson and Maurice E. Marcove, appointed instructors in ophthalmology.
Dr. Ora L. Huddleson, appointed instructor in physiology and pharmacology.
Dr. Enid K. Rutledge, appointed instructor in pathology.
Dr. John B. Davis, resigned as associate professor of surgery (urology).
Dr. William C. Finnoff, resigned as associate professor of ophthalmology.

CONNECTICUT

Bill Introduced.—A substitute for H. 502 proposes to authorize the state department of health, instead of the governor, to license annually institutions for the treatment or detention of insane persons or persons suffering from other abnormal mental or nervous conditions. The department is to be authorized to prescribe a sanitary code for the government of such institutions and to revoke licenses for stated causes.

DELAWARE

Society News.—Dr. George E. Pfahler, Philadelphia, addressed the New Castle County Medical Society at Wilmington, April 18, on "Irradiation Treatment of Uterine Tumors." Case reports were given by Drs. Louis S. Parsons, Wilmington, and Edgar R. Miller, Richardson Park, on "Congenital Occlusion of the Common Bile Duct" and "Undulant Fever," respectively. Dr. Wilmer Krusen, Philadelphia, delivered a public lecture, April 21, on "Pharmacy and the Public." C. J. Hollister, D.D.S., chief, dental division, Pennsylvania State Department of Health, gave a public address, April 26, on "Effect of Teeth on the Future of Our Country." These lectures were under the auspices of the Delaware Academy of Medicine.

DISTRICT OF COLUMBIA

Society News.—Speakers before the Medical Society of the District of Columbia, March 29, were Drs. William Calhoun Stirling, Jr., on "Recurrent Cancer of the Prostate, Unrelieved by Prostatectomy, Treated by Transurethral Resection," and Richard A. Kearny, "Observations and Considerations on the Diagnosis and Treatment of Mastoiditis."——Dr. Wallace M. Yater addressed the District of Columbia Dental Society, March 28, on "How Much of a Physician Should a Dentist Be?" and "Fundamentals of Heart Disease." George R. Ellis, D.D.S., spoke on "Relation of General Dentistry to Systemic Diseases." Boyd S. Gardner, D.D.S., Rochester, Minn., addressed a joint meeting of the society with the Medical Society of the District of Columbia, March 22, on the relationship between medicine and dentistry.

District Election.—Dr. Prentiss Willson, Washington, was elected president of the Medical Society of the District of Columbia at its annual session, May 3, to serve from July, 1933, to June 30, 1934. Vice presidents are Drs. Daniel Leray Borden and Margaret Mary Nicholson. Dr. Coursen B. Conklin, Washington, was reelected secretary. Included among the speakers on the program were Drs. Leonard G. Rowntree, director, Philadelphia Institute for Medical Research, Philadelphia, on "Recent Advances in Diseases of the Endocrine Glands," and Maude E. Abbott, curator of Medical Museum, McGill University, Montreal, "Personal Reminiscences of Osler and Remarks on His Contribution to Our Knowledge of Heart Disease." Dr. Dean Lewis, Baltimore, President-elect, American Medical Association, addressed a public meeting, April 26, on "Changing Times in Medicine."

FLORIDA

Bills Introduced.—S. 471, to amend the laws regulating the possession and distribution of narcotic drugs, proposes (1) to prohibit the possession of any narcotic drug or cannabis indica exeept on the written prescription of a duly licensed physician, dentist or veterinarian, (2) to make a violation of the act a felony, punishable by one year in prison and a fine of not less than $1,000, or both, and (3) to make it the duty of the state board of health and of all peace officers to enforce the provisions of the act. H. 1070 proposes to forbid the selling at retail of marihunan, marijuana, cannabis indica, hashish, gangah, gringah, bhang, loco weed, or any compounds containing cannabene, cannabinol or lacoine, except by a licensed druggist on the written prescription of a licensed physician or dentist.

GEORGIA

State Medical Election.—Dr. Clarence L. Ayers, Toccoa, was named president-elect of the Medical Association of Georgia at the close of the annual meeting in Macon. Dr. Charles H. Richardson, Jr., Macon, was installed as president and the following were elected vice presidents: Drs. Joseph D. Applewhite, Macon, and William W. Turner, Jr., Nashville. The 1934 session will be held in Augusta.

ILLINOIS

State Medical Election.—Dr. Charles D. Center, Quincy, was chosen president-elect of the Illinois State Medical Society at the annual meeting in Peoria, May 18, and Dr. Philip H. Kreuscher, Chicago, became president. Vice presidents elected were Drs. Charles G. Farnum, Peoria, and Harold V. Gould, Chicago. Dr. Harold M. Camp, Monmouth, was reelected secretary. The society will meet in Springfield in 1934.

Dr. Ascher Elected Mayor.—Dr. John A. Ascher was elected mayor of Freeport, April 4, and he assumed office, May 1. Dr. Ascher, who is a member of the board of censors of the Stephenson County Medical Society, was president of the society in 1926. In Sparks, Nev., where he practiced for several years, Dr. Ascher served at different times as city and county health officer.

Campaign Against Diphtheria.—A house to house canvass throughout Decatur is part of a special campaign against diphtheria being carried on under the auspices of the community health council and the city health officer, the Illinois *Health Messenger* reports. A chairman and twenty or more workers for each of twenty-five districts were recruited from volunteers in parent-teacher associations. Each worker was assigned a definite area. Every home is visited and a record obtained of all children under 16 years of age. Literature on diphtheria prevention is left with the parents. For persons unable to pay, special clinics are being held, the first of which was scheduled, April 15. In addition to the canvass, illustrated lectures were given in various parts of the city.

Chicago

Case Nolle Prossed.—The case of Dr. Anthony M. Catania, who had been indicted by the grand jury, Dec. 28, 1932, on a charge of murder by abortion, was nolle prossed by the state's attorney when it was called for trial in criminal court, March 23. Dr. Catania graduated in 1930 from Loyola University School of Medicine and was licensed in Illinois the same year.

Personal.—Dr. Ernest E. Irons, dean, Rush Medical College, has been appointed chairman of the department of medicine, succeeding Dr. George F. Dick. Dr. Dick continues as professor in the department of medicine at the college and as professor and chairman of the department of medicine in the Division of Biological Sciences, University of Chicago.——Dr. William P. MacCracken, senior medical examiner for the aeronautics branch of the U. S. Department of Commerce in

this area, has been appointed medical director of the American Air Races to be held at the Chicago airport, July 1-4.

Society News.—"Influence of the Pituitary Gland on Metabolism" was discussed at the meeting of the recently organized Endocrine Club, April 18; speakers were Dr. Hugo R. Rony and Broda O. Barnes, Ph.D.——Dr. Arthur C. Christie, Washington, D. C., addressed the Chicago Roentgen Society, April 20, on "Relation of the Medical Profession to the Costs of Medical Care."——Dr. Janet S. Barnes, Ann Arbor, addressed the Chicago Council of Medical Women, May 5, on "Problem Parents of the So-Called Problem Children."——Speakers before the Chicago Pathological Society, May 8, included Drs. Victor Levine on "Chronic Embolism of the Lungs"; William R. Williams, Riverside, Ill., "Experimental Studies of the Effects of Lung Compression on the Pulmonary Circulation," and Perry J. Melnick, "Theca Cell Tumors of the Ovary."——Dr. Edward A. Bullard, New York, among others, addressed the Chicago Gynecological Society, May 19, on "Cervicitis and Its Operative Treatment."

INDIANA

Society News.—At a meeting of the Fifth District Medical Society in Terre Haute, May 5, poliomyelitis was discussed by Drs. William H. Allen, Virgil E. Simpson, James H. Pritchett and Frank P. Strickler, all of Louisville, Ky.——Dr. Joseph H. Weinstein, Terre Haute, talked on medical economics before the Bartholomew County Medical Society at Columbus, May 3.——The Tippecanoe County Medical Society was addressed by Dr. John Sundwall, Ann Arbor, Mich., on "Social Trends in Medical Practice" and "Critical Age of Forty."——Dr. Granville S. Hanes, Louisville, conducted a rectal clinic before the Ripley County Medical Society in Osgood, May 10.——A symposium on the education of the public in medical matters was presented before the Indianapolis Medical Society, May 16; the speakers were Drs. Thurman B. Rice, James H. Stygall, John A. MacDonald and William N. Wishard, Sr.——Dr. Olin West, Chicago, secretary and general manager of the American Medical Association, addressed the St. Joseph County Medical Society in South Bend, April 26, on medical economics.

IOWA

Society News.—Dr. Benjamin F. Wolverton, Cedar Rapids, was elected president of the Iowa Clinical Medical Society at its spring meeting, April 13.——Dr. Augustus G. Pohlman, Vermilion, addressed the section on ophthalmology of the Des Moines Academy of Medicine and the Polk County Medical Society, April 17, on "Difference Between the Visualized and Auditorized Interpretations of the Hearing Apparatus, and Their Relation to the Prevention and Treatment of Deafness."

Inter-Professional Association.—The O'Brien County Inter-Professional Association was recently organized, according to the *Journal of the Iowa State Medical Society*, to protect the public health from jeopardy by unskilled, poorly trained and otherwise incompetent persons. The new organization will also concern itself with all public health problems, including vaccination for contagious diseases, prevention and control of epidemics, and testing of milk cattle herds. Membership comprises fifty-five physicians, dentists, druggists, veterinarians and nurses. The society will meet quarterly.

KENTUCKY

Society News.—Drs. Emmet F. Horine and Morris M. Weiss addressed the Jefferson County Medical Society, Louisville, May 15, on "Etiological Incidence of Heart Disease in Kentucky." Dr. Max Cutler, Chicago, addressed the society, April 17, on "Relation of Chronic Mastitis, Cysts and Papilloma to Carcinoma of the Breast. Demonstration of Tumors of the Breast by Transillumination."——Dr. L. Wallace Frank, Louisville, addressed the Christian County Medical Society, Hopkinsville, March 21, on cancer of the breast.

MAINE

Society News.—At a meeting of the Androscoggin Medical Society, April 14, Dr. George E. Young, Skowhegan, gave an illustrated address on chest surgery and surgical treatment of tuberculosis of the lungs.——The Cumberland County Medical Society was recently addressed by Dr. Eric M. Matsner, New York, on "Technic of Contraception."——Dr. Thomas A. Foster discussed "Rheumatic Fever" before the Portland Medical Club, April 4.——A recent meeting of the Penobscot County Medical Association was addressed by Drs. Harry Butler and Magnus F. Ridlon, Bangor, among others, on "Sinus Disease and General Diagnosis" and "Dehydration Treatment of Eclampsia," respectively.

MASSACHUSETTS

Society News.—Dr. Zabdiel B. Adams, Boston, addressed the New England Roentgen Ray Society, April 21, on "Early Appearance and End-Results of Skeletal Tuberculosis."——Among others, Dr. Alice Ettinger, Berlin, Germany, addressed a joint meeting of the Greater Boston Medical Society and the Beth Israel Hospital, April 18, on "X-Ray Studies of the Gastro-Intestinal Mucosa: Diagnostic Value."——Dr. Howard W. Haggard, New Haven, Conn., addressed the Worcester District Medical Society in Rutland, April 12, on "Charlatanism."——At a meeting of the South End Medical Club in Boston, April 18, Dr. William P. Boardman spoke on syphilis.

Public Health Lectures.—An institute of public health was begun in Roxbury, April 24, under the auspices of the Boston Health Department. On this day, Drs. Wilson G. Smillie spoke on "The Physician and Public Health"; Thomas R. Goethals, "Obstetrics: Prenatal Care," and Alonzo K. Paine, "Delivery and Postpartum Care." Subsequent lectures were as follows:

Drs. Richard M. Smith and Harold C. Stuart, The Infant and Child: Normal Development, Health Supervision, Prevention of Disease, April 26 and 28.
Dr. Edwin H. Place, Methods for the Control of Specific Diseases, May 1.
Dr. Cleaveland Floyd, Prevention and Control of Tuberculosis, May 1.
Dr. William H. Robey, Extension of Preventive Measures in Adult Life, May 3.
Clair E. Turner, Dr.P.H., Health Education, May 5.
Dr. Charles F. Wilinsky, Relationships Between Health Departments and the Medical Profession, May 5.

MICHIGAN

Bills Introduced.—H. 580, to amend the narcotic drug act, proposes to eliminate the provision which requires that exempted preparations of narcotic drugs contain some drug adapted in quantity and quality to prevent the use of the exempted preparation for gratification of narcotic addiction. H. 622, to amend the workmen's compensation act, proposes to increase from 90 to 180 days the period after an industrial injury during which an employer must furnish medical, surgical and hospital services and medicines to an injured employee.

Report on Survey of Michigan Medical and Health Agencies.—The secretary of the Michigan State Medical Society, Dr. Frederick C. Warnshuis, Grand Rapids, informs THE JOURNAL that a complete report of the great survey of medical and health agencies in the state of Michigan which has been in process of development for more than a year will be available early in June. The report is exceedingly comprehensive and includes some thirty pages of summary and forty pages of conclusions. Those who desire a copy of this report may secure one by writing directly to the Secretary of the Michigan State Medical Society, the cost of the publication being $2.50 per copy. There are to be 250 pages in the report exclusive of tables, maps and charts.

Plan to Care for Middle Class.—Complete diagnostic facilities will be available to every worthy patient at a cost directly proportionate to his ability to pay, through a plan evolved by the Wayne County Medical Society to provide medical care for the middle class. In addition, the project offers the advantages of a well organized type of group practice, free choice of physician and the preservation of the present fundamentals of medical practice. The society will become an active staff caring for patients in this class, its headquarters serving as a coordinating center for those who need but cannot afford complete diagnostic service at customary rates. Forms will be used to determine the percentage ability to pay, so that an equable basis may be furnished each physician, x-ray or clinical laboratory to make charges. Patients who apply at the headquarters are to be referred to a general practitioner or family physician listed in a directory made up of the society's members.

MISSOURI

Trudeau Lecture.—Dr. Allen Krause, Tucson, Ariz., gave the annual Trudeau Lecture before a joint meeting of the St. Louis Trudeau Club and the St. Louis Medical Society, April 25. His subject was "The Principles of Activity in Pulmonary Tuberculosis." The lecture is sponsored by the Trudeau Club.

Gift to Medical School.—Presentation of 1,250 copies of THE JOURNAL was recently made to Washington University School of Medicine, St. Louis, by Dr. Charles S. Austin, Carrollton, an alumnus. In addition to these journals, which date from 1909, a number of old medical volumes, going as far back as 1838, were included. The latter were a part of the medical library of Dr. Austin's grandfather, Dr. John S. Williams, said to have been the first physician to locate in Chillicothe.

Library in New Quarters.—The library of the Jackson County Medical Society has been moved from the Medical Arts Building in Kansas City to the second floor of the Kansas City General Hospital. The nucleus of the library, which was assembled by the Kansas City Medical Club, consisted of books and journals belonging to Dr. Arthur E. Hertzler. In 1921, the Jackson County Medical Society took over the library. From its inception in 1911 to 1921, the library was housed in the Rialto Building; from 1921 to 1925 it occupied quarters at the Kansas City General Hospital, and from 1929 through 1932 it was in the Medical Arts Building. In 1932, 7,562 persons used the library, as compared with 897 in 1914.

NEBRASKA

Change in State Health Department.—Under new legislation, effective April 1, the State of Nebraska Department of Health replaced the former Department of Public Welfare. Dr. Philip H. Bartholomew is now director of health.

Society News.—Members of the staff of University Hospital presented the program of the Omaha-Douglas County Medical Society, Omaha, April 11, as follows: Drs. Manuel Grodinsky, "Experimental and Clinical Studies of Spinal Anesthesia"; Alfred J. Brown, "Pentacaine as a Spinal Anesthetic"; Olin J. Cameron, "Self-Induced Lesions of Skin," and Ernest L. MacQuiddy, "Air Conditioning."——Drs. John C. Thompson and Clarence C. Hickman, Lincoln, addressed the March meeting of the Otoe County Medical Society, Nebraska City, on "Arthritis with Reference to Treatment with Crowe's Vaccine" and "Tumors of the Colon with Special Reference to Multiple Polyposis," respectively

NEW HAMPSHIRE

Personal.—At a recent special election, Dr. George W. Nutter, Salmon Falls, who is 75 years old, was elected representative to the state legislature, succeeding the late Gardner Grant. Dr. Nutter has served four previous terms in the legislature.

Society News.—At a recent meeting of the Carroll County Medical Society in Wolfeboro, Drs. John S. Wheeler, Wolfeboro, and Harry O. Chesley, Dover, president of the state medical society, spoke on "Complications of Influenza" and "Problems of Organized Medicine," respectively. Motion pictures on "Traumatic Surgery of the Extremities" were also shown at this meeting.

NEW YORK

Care of the Indigent in Buffalo.—Under a plan recently evolved by the committee on medical economics of the Erie County Medical Society and representatives of the hospitals and social agencies of Buffalo, free or part pay clinics investigate the financial status of those who apply for treatment and refer them back to private physicians. The physicians may then accept them as free or part pay patients or send them back to the clinic. In acute conditions, treatment will be given immediately, however.

Typhoid Carriers in 1932.—Six hundred and twenty typhoid carriers were registered by the New York State and New York City departments of health at the end of 1932, an increase of 61 over the previous year. Of this number 311 were in New York City, 290 in the state outside New York City, and 19 in state institutions. Only eight carriers who were under supervision of the state health department, Jan. 1, 1932, are known to have caused cases in 1932. Of twenty cases traced to these carriers, eleven are known to be due to one carrier, who handled food at a party despite the fact that she had been warned of the danger of infecting other persons.

New York City

Hospital News.—Alumni Day was observed at the Hospital for Joint Diseases, May 3. Operative clinics were held in the morning, followed by demonstrations of the use of filtered ultraviolet radiation in the operating room and pathologic specimens of intervertebral disks and sacro-iliac joints. A dry clinic was held in the afternoon, after which Dr. Emanuel Libman presented a paper on "Diagnostic Observations on Some Abdominal Diseases" and Dr. Edgar M. Bick, on "Present Trends in Orthopedic Surgery in Light of Its Past History."

Columbia University News.—Columbia University College of Physicians and Surgeons has announced the appointment of Howard B. Adelmann, Ph.D., as assistant professor of anatomy; Dr. Richard F. Thompson, assistant professor of bacteriology, and Dr. Karl Meyer, assistant professor of biologic chemistry. Dr. Meyer received his medical degree at the University of Cologne, Germany, and has recently been at the University of California.——The alumni association of the college held its annual dinner, March 29, in Bard Hall, with Dr. Bern B. Gallaudet, associate professor of anatomy, as guest of honor.——A fund to establish the Herbert Swift Carter Lectureship in Diseases of the Digestive Tract has been set aside to commemorate the life and work of the late Dr. Carter, for many years a member of the Columbia faculty.

Honorary Fellows Elected.—Thirteen physicians and research workers have recently been elected to honorary fellowship in the New York Academy of Medicine, as follows:

Dr. James B. Herrick, emeritus professor of medicine, Rush Medical College, Chicago.
Dr. George R. Minot, professor of medicine, Harvard University Medical School, Boston.
Dr. William Gibson Spiller, professor of neurology, University of Pennsylvania School of Medicine, Philadelphia.
Dr. Frederick G. Banting, professor of medical research, University of Toronto, Ontario.
Prof. Charles Achard, Faculté de médecine, Paris.
Dr. Roberto Alessandri, director of surgical clinic, University of Rome.
Sir Charles Ballance, consulting physician, St. Thomas' Hospital, National Hospital for Paralysis and Epilepsy, London.
Sir Henry H. Dale, director, National Institute for Medical Research, London.
Otfried Foerster, professor of psychiatry and neurology, University of Breslau, Germany.
Carl Gustaf Forssell, professor of radiology, Medico-Chirurgical Institute, Stockholm, Sweden.
Cornelius Ubbo Ariens Kappers, professor of comparative anatomy of the nervous system, University of Amsterdam.
Alfred Vogt, professor of ophthalmology, University of Zurich, Switzerland.
Karel Frederick Wenckebach, for many years professor of medical pathology and therapy, University of Vienna.

NORTH CAROLINA

State Medical Election.—Dr. Paul P. McCain, Sanatorium, was chosen president-elect of the North Carolina State Medical Society at the annual meeting in Raleigh in April. Dr. Isaac H. Manning, Chapel Hill, was installed as president. At a joint meeting of the society with the state board of health, Drs. William T. Rainey, Fayetteville, and Sylvester D. Craig, Winston-Salem, were elected to the board. Pinehurst was designated as the place for the next annual session, May 30-June 2, 1934. Dr. L. B. McBrayer, Southern Pines, is secretary of the society.

OHIO

Personal.—Dr. and Mrs. Charles Huber, Harrison, celebrated their golden wedding anniversary, April 17.——Dr. J. Eugene Baker, Marion, was recently guest of honor at a special meeting conducted by his Sunday school class celebrating his fiftieth anniversary in the practice of medicine. Members of the Marion Academy of Medicine were guests.——Dr. Jerome Gross, Cleveland, gave a violin recital in the auditorium of the Cleveland Medical Library, May 2.——Dr. Aaron H. Smith recently assumed the superintendency of Pleasant View Sanatorium, Amherst.——Dr. Emerson Paul Shepard, formerly of Columbus, has been named president of the American Medical Association in Vienna, according to the Quincy (Ill.) *Medical Bulletin.* Dr. Shepard is studying in Vienna.

Appointments at Cincinnati.—The board of trustees of the University of Cincinnati School of Medicine recently announced the following appointments and promotions:

Dr. Emerson A. North, professor and head of the department of psychiatry.
Dr. Frank M. Coppock, Jr., head of the department of gynecology.
Dr. Maurice Levine, assistant professor of psychiatry.
Dr. Gustav Eckstein, Jr., assistant professor of physiology.
Dr. Franz H. Miketta, associate professor in obstetrics.
Drs. Daniel J. Davies and Robert L. Crudgington, assistant professors of obstetrics.
Dr. Helena T. Ratterman, assistant clinical professor.
Drs. Thaddeus R. Gillespie and William P. Gillespie, instructors in obstetrics.
Dr. James M. Pierce, instructor in obstetrics.
Drs. Lloyd B. Johnston and Francis M. Oxley, instructor in clinical surgery.
Dr. Jean M. Stevenson, assistant in surgery.

PENNSYLVANIA

Society News.—Drs. Bernard J. McCloskey and Horace B. Anderson, Johnstown, addressed the Cambria County Medical Society, May 11, on heart disease and Lycurgus M. Gurley, Johnstown, presented a review of research in ophthalmology.——Drs. John P. Harley and Charles L. Youngman, Williamsport, discussed medical economics and blood transfusion, respectively, at a meeting of the Tioga County Medical Society, April 21.——Dr. Norris W. Vaux, Philadelphia, was the speaker at a meeting of the Delaware County Medical Society, Chester, May 11, on advances in teaching and practice of obstetrics. At a joint meeting with the dentists of Delaware County in March, the society heard addresses by Dr. Chevalier Jackson, on "Bronchoscopic and Esophagoscopic Cases of

Interest"; James R. Cameron, D.D.S., cooperation between medicine and dentistry; Dr. Seth A. Brumm, the economic situation in medicine, and E. Fullerton Cooke, Pharm.D., public health service of the pharmacist. All were from Philadelphia. ——Dr. Ralph M. Tyson, Philadelphia, addressed the Dauphin County Medical Society, Harrisburg, May 2, on preventive pediatrics for the general practitioner.——Dr. Adam C. Williamson, Pittsburgh, addressed the Washington County Medical Society, Washington, May 10, on "Temperatures and Complications of the Puerperium."——Dr. Wallace S. Duncan, Cleveland, addressed the Fayette County Medical Society, May 4, on "Post-Traumatic Back Pain in Relation to Compensation." ——Drs. Hubert A. Royster, Raleigh, N. C., and William D. Reid, Boston, were guests of the Lycoming County Medical Society at its annual spring clinic meeting at Williamsport, May 12. Dr. Reid discussed diagnosis and prognosis of heart disease and Dr. Royster, various aspects of appendicitis.

Philadelphia

Society News.—Dr. Max M. Strumia, among others, addressed the Pathological Society of Philadelphia, May 11, on "Agranulocytosis and Acute Leukemia."——Drs. Samuel Goldberg and Nathan M. Levin, among others, addressed the Philadelphia Pediatric Society, May 9, on "Pediatric Studies of Pulmonary Suppuration and Foreign Bodies."

Portrait Presented to Jefferson.—The class of 1933 at Jefferson Medical College presented to the college a portrait of the late Dr. Elmer H. Funk, who was professor of therapeutics. Dr. Thomas McCrae made the presentation on behalf of the class, April 6, and the portrait was accepted by Alba B. Johnson, chairman of the board of trustees. Dr. Funk was medical director of Jefferson Hospital during the absence of Dr. Henry K. Mohler in war service and later became professor of diseases of the chest.

Demonstrations on Heart Disease.—The Philadelphia Heart Association presented intensive demonstrations of the latest methods of diagnosis and treatment of heart disease, May 15-18. About thirty-five physicians participated in the demonstrations, which were held at Pennsylvania Hospital, Temple University Medical School, Hospital and the Medical Clinic of the University of Pennsylvania, Jefferson Medical College Hospital, the pathology laboratory of the University of Pennsylvania School of Medicine and the Philadelphia General Hospital.

RHODE ISLAND

State Medical Meeting, June 1.—The annual meeting of the Rhode Island Medical Society will be held in Providence, June 1, under the presidency of Dr. Norman Darrell Harvey, Providence. The program is as follows:

Dr. Lyman G. Richards, Boston, Acute Tracheobronchitis in Children.
Dr. Max J. Exner, New York, Congenital Syphilis.
Dr. Ralph Pemberton, Philadelphia, Arthritis.
Dr. Henry W. Hudson, Jr., Boston, Abdominal Emergencies in Infancy and Childhood.
Dr. Marshall N. Fulton, Boston, Use of Diuretics in the Treatment of Renal and Cardiac Eczema.
Dr. Clifton B. Leech, Providence, Complete Heart Block in Young People.
Dr. Frederic V. Hussey, Providence, Surgical Risks and Postoperative Complications of Diseases of the Biliary Tract.
Dr. Harold F. Corson, Providence, Diagnosis and Treatment of Children Thought to Have Epilepsy.

The annual dinner will be held at the Squantum Club with Richard Washburn Child, Newport, former ambassador to Italy, as speaker.

SOUTH DAKOTA

Society News.—The Aberdeen District Medical Society held its quarterly meeting, April 11, with the following speakers on the program: Drs. Nelson W. Barker, Rochester, Minn., on "Differential Diagnosis and Treatment of Vascular Diseases of the Extremities"; Carl W. Forsberg, Sioux Falls, "Practical Laboratory Tests and Their Interpretation," and Maksymiljan R. Gelber, Britton, "Avertin and Spinal Anesthesia." ——Dr. Oliver J. Fay, Des Moines, Iowa, addressed the Yankton District Medical Society, Vermilion, April 28, on the reports of the Committee on the Costs of Medical Care.

TEXAS

Public Health Forum in Fort Worth.—The Tarrant County Medical Society during the past year established an open forum for the public for the discussion of physical and mental hygiene. Meetings are held weekly at the auditorium of the society, and the interest has grown so that the hall is inadequate, according to a report in the *Texas State Journal of Medicine*. A member of the society makes a talk each week and allows time for questions and answers. Among speakers have been Drs. Arthur H. Flickwir, on rabies; Edwin G. Schwarz, prevention of infectious diseases in children; Marquis E. Gilmore, blood pressure; William S. Barcus, diabetes, and Jack McLean, acute abdominal conditions.

Society News.—Drs. James H. Black and Julia Florence Widney Austin, Dallas, among others, addressed the Dallas County Medical Society, April 13, on "Blood Sugar in Allergic Persons" and "High Blood Pressure and Hypothyroidism," respectively. Among speakers at the meeting were Drs. Curtice Rosser and George T. Caldwell, Dallas, on "Venereal Diseases Affecting the Rectum" and "Neoplasms of Reticulo-Endothelial Origin," respectively.——The Texas Club of Internists held its spring meeting in Forth Worth, March 3-4, with Dr. Allen K. Krause, Tucson, Ariz., as guest. Dr. Krause made an address on "Tuberculosis, a Generalized Infection." Dr. William E. Nesbit, San Antonio, was elected president.——The Northwest Texas District Medical Society met in Mineral Wells, March 7; among speakers were Drs. Everett C. Fox, Dallas, on "Treatment of Skin Cancer" and Arthur C. Scott, Temple, "What the Public Should Know About Cancer."——Dr. Roy L. Vineyard, Amarillo, was chosen president-elect of the Panhandle District Medical Society at its spring meeting in Amarillo, April 12. Among the speakers were Drs. Alfred I. Folsom, Dallas, on prostatic resection; Thomas E. Carmody, Denver, sinus infections, and Albert O. Singleton, Galveston, surgery of the heart. The fall meeting will be held in Plainview.

VIRGINIA

Society News.—Dr. Harold L. Amoss, Durham, N. C., was the guest speaker at the annual all day clinic of the Norfolk County Medical Society, Norfolk, April 12. Dr. Amoss spoke on "Treatment of Streptococcic Pneumonia."——Drs. Samuel J. Kopetzky, New York, and Thomas D. Allen, Chicago, addressed the Virginia Society of Otolaryngology and Ophthalmology at the annual meeting in Harrisonburg, May 6, on "Problems Concerned with Petrositis" and "Dissecting Blebs Following Fistualization Operations," respectively.

University News.—Courses will be offered at the University of Virginia department of medicine, June 19-July 29, in histology, embryology, anatomy, biochemistry, physiology, medical bacteriology, pathology, pharmacology and mental hygiene.——Clinics in pediatrics, obstetrics, surgery and medicine were presented for practicing physicians, March 22-23, at the Medical College of Virginia, Richmond. Instructors were Drs. Samuel A. Anderson, Jr., Lee E. Sutton, Jr., Fred J. Wampler, Harry H. Ware, Jr., Greer Baughman, Isaac A. Bigger, Donald M. Faulkner, George Paul La Roque, Claude C. Coleman, Manfred Call, James H. Smith, William A. Shepherd, William H. Higgins and James M. Hutcheson.

WASHINGTON

Personal.—Dr. Albert E. Stuht, Seattle, has resigned as state health commissioner of the Washington State Board of Health after serving for eight years. Dr. Austin U. Simpson, assistant director of health, will be in charge of the department until a new director has been appointed.

WEST VIRGINIA

Bill Passed.—H. 98 has passed the house, proposing to require the physical examination of all children at the time they enter public or private schools for the first time, to determine the presence of communicable diseases or defects. Children found suffering from any communicable disease in an acute or infectious stage are to be barred from school.

Acting Health Commissioner Appointed.—Dr. David Littlejohn, director of rural sanitation in the state health department since 1927, has been appointed acting head of the department to succeed Dr. William T. Henshaw, resigned. Dr. Littlejohn served as health officer of Bluefield for several years and had previously been health officer of various towns in the Middle West. He is president of the West Virginia Public Health Association.

Society News.—Dr. Stuart McGuire, Richmond, addressed the Kanawha Medical Society, Charleston, April 11, on "Cancer of the Breast."——A meeting of the Wyoming County Medical Society, Mullens, March 28, was devoted to discussion of the West Virginia compensation law.——At a joint meeting of the Cabell County Medical Society and the Parkersburg Academy of Medicine in Huntington, April 13, Drs. Oliver D. Barker and William R. Goff, Parkersburg, discussed urologic cases and hypothyroidism.——Dr. Harry McGrath, Montgomery, addressed the Fayette County Medical Society, Montgomery, April 12, on "Relation of the Paranasal Sinuses to Systemic Disease."——At the quarterly meeting of the Central Tri-State

Medical Society, Huntington, May 18, speakers were Drs. Philip F. Barbour, Louisville, Ky., on "The Cost of Medical Care"; Clyde M. Fitch, Portsmouth, Ohio, "Effectiveness of Mercury as a Diuretic"; Wade H. St. Clair, Bluefield, "Review of Gallbladder Surgery"; William A. MacMillan, Charleston, W. Va., "Intestinal Obstruction," and William S. Fulton, Wheeling, W. Va., "The Hundredth Case."——Dr. P. Brooke Bland, Philadelphia, addressed the Ohio County Medical Society, Wheeling, April 28, on "Prevention of Maternal Mortality from Puerperal Hemorrhage."

WISCONSIN

Bill Introduced.—Substitute Amendment No. 1 to A. 589 proposes to create a board of chiropractic examiners and to regulate the practice of chiropractic. Licentiates are to be permitted to practice "chiropractic," which the bill does not define, to make and sign birth and death certificates, to render the medical care which employers are required under the workmen's compensation act to furnish their injured employees and to use the title "doctor," if the designation "doctor of chiropractic" or the abbreviation "D.C." appears following the name of the licensee.

WYOMING

County Health Officers.—The state board of health, the Casper *Herald* reports, has recently assigned county health officers as follows:

Albany, Dr. Richard M. Leake.
Big Horn, Dr. Stanley L. Myre.
Campbell, Dr. J. C. McHenry.
Carbon, Dr. Charles W. Jeffrey.
Converse, Dr. Joseph R. Hylton.
Crook, Dr. John L. Bostwick.
Fremont, Dr. Paul R. Holtz.
Goshen, Dr. Orville C. Reed.
Hot Springs, Dr. Robert W. Hale.
Johnson, Dr. Walter J. Knebel.
Laramie, Dr. George M. Anderson.
Lincoln, Dr. John R. Newnam.
Natrona, Dr. Joseph C. Kamp.
Niobrara, Dr. Guy D. Murphy.
Park, Dr. Frances M. Lane.
Platte, Dr. Charles E. Fish.
Sheridan, Dr. E. E. Whedon.
Sublette, Dr. John W. Montrose.
Sweetwater, Dr. E. S. Lauzer.
Teton, Dr. Charles W. Huff.
Uinta, Dr. Josiah H. Holland.
Washakie, Dr. Paul S. Read.
Weston, Dr. Fred Horton.

GENERAL

Decrease in Smallpox.—Comparison of the number of cases of smallpox reported for the years 1928 to 1932, inclusive, shows the most notable decrease of any disease reported to the U. S. Public Health Service in that period. In 1932 there were 11,168 cases, compared with 39,396 in 1928. Figures for the intervening years are: 1929, 42,282; 1930, 48,907, and 1931, 30,232.

Medical Information During Century of Progress.—The committee of the Chicago Medical Society for the Century of Progress is arranging a booklet on medical information about Chicago, which will include a list of fixed clinics in hospitals and medical schools. The committee will supply visiting physicians with information at its bureau of information and booth, K-15 ramp, in the Hall of Science. The wives and daughters of physicians will also be assisted at this booth by the woman's auxiliary of the Chicago Medical Society. Dr. Hugh N. MacKechnie is chairman of the committee.

Hotel Physicians Organize.—A number of physicians associated with large hotels in Chicago recently organized the Hotel Physicians Association of America with the following officers: Dr. Maurice W. Samuels, president; Lee H. Kiel, vice president, and Joseph N. Blake, secretary, all of Chicago. Purposes of the association are to raise and maintain the standard of practice in hotels, to protect the health and welfare of the traveling public, to establish a medium of exchange of information among hotel physicians and to keep unethical practitioners out of hotels. It is planned to extend the organization gradually to hotel physicians throughout the country. Applicants for membership must be graduates of class A schools of medicine and members of the American Medical Association in good standing.

Delegates to Congress on Military Medicine.—The U. S. Department of State announces that at the invitation of the Spanish government delegates to the Seventh International Congress of Military Medicine and Pharmacy at Madrid, May 29-June 4, will be as follows:

Dr. John McMullen of the U. S. Public Health Service, now stationed in Paris.
Col. Harold D. Corbusier, Medical Reserve, U. S. Army, Plainfield, N. J.
Lieut.-Col. Francis E. Fronczak, Medical Reserve, U. S. Army, Buffalo.
Commander William Seaman Bainbridge, Medical Reserve, U. S. Navy.
Major Edgar E. Hume, Medical Corps, U. S. Army, Army Medical Museum, Washington, D. C.
Lieut.-Com. Julius F. Neuberger, U. S. Naval Hospital, Newport, R. I.

Medical Director McMullen and Lieutenant Commander Neuberger will represent the United States at the International Congress on Sanitary Aviation, to be held concurrently.

News of Epidemics.—An outbreak of forty-three cases of smallpox was reported from Lowellville, Ohio, during March. About 1,500 persons were vaccinated.——A case of smallpox in a visitor to Barney, Ga., in March, resulted in wholesale vaccination of citizens of Quitman and Brooks counties.——An outbreak of typhoid at Banner Elk, N. C., in April, was traced to a contaminated water supply.——Mumps was reported to be epidemic in Waterloo, Iowa, 119 cases having been noted during March.——Seven rural schools were closed and public gatherings were banned in several townships in Portage County, Ohio, because of a serious outbreak of scarlet fever in March and April. Epidemics were also recently reported from Akron, Ohio; Alpena, Mich., and Arlington, Wis.——In Toledo, Ohio, 1,172 cases of measles were reported between April 1 and 24. In Dallas, Texas, 529 new cases were reported during the last week of March.——Six cases of diphtheria, with one death, were reported from the village of San Mateo, N. M., April 10.

Impostor Uses Physicians' Names.—Dr. Paul K. Shirk, Yonkers, N. Y., reports the activities of a man who is obtaining money pretending to be a physician. He appeared at Dr. Shirk's office, March 15, claiming to be Dr. Malachi W. Sloan, Jr., and giving his address as Tyrone, Pa., and the name of Dr. William Hermanutz, supposedly also of Tyrone, as reference. Investigation revealed that Dr. Sloan and Dr. Hermanutz do not live in Tyrone. About April 1 the same man appeared at Jefferson Medical College, Philadelphia, calling himself Dr. Sloan and using the names of Dr. Edward J. Wagner, New York, and Dr. Shirk as references to "borrow" money from a student. The impostor is said to be about 25 years old, 5 feet 6 inches tall, and clean shaven, with light brown hair and gray or blue eyes. According to Dr. Shirk, he dresses cheaply and his grammar is poor. He claims, however, to be a graduate of Northwestern University Medical College, Chicago. He appears to know many Jefferson graduates and has sufficient knowledge of medical phraseology to carry him through a general conversation.

Society News.—The American Laryngological, Rhinological and Otological Society will hold its annual meeting in Chicago, June 8-10, at the Lake Shore Athletic Club under the presidency of Dr. Joseph C. Beck, Chicago. Members of the medical profession are cordially invited to attend. For all other information write Miss Margaret Wolf, Room 2009, 25 East Washington Street, Chicago. Telephone Randolph 0244.——The American College of Physicians announces that its eighteenth annual clinical session will be held in Chicago, April 16-20, 1934. Mr. E. R. Loveland, executive secretary, 133-135 South Thirty-Sixth Street, Philadelphia, is in charge of general arrangements.——The National Research Council recently awarded eighteen fellowships in medicine for study in the United States and Europe. Applications to be placed before the fall meeting of the Medical Fellowship Board should be filed with the Washington office before August 1.——The Great Northern Railway Surgeons' Association will hold its annual meeting in Portland, Ore., June 19-20. Speakers will include Drs. Charles W. Burns, Winnipeg, Manit., on "Traumatic Rupture of Spleen"; Paul O. Neraal, Cut Bank, Mont., "Treatment of Supracondylar Fractures of the Humerus," and Roscoe C. Webb, Minneapolis, "Application of First Aid Splints to Fractures of the Upper and Lower Extremity."

Sectional Meetings on Physical Therapy.—The eastern section of the American Congress of Physical Therapy met in Philadelphia, May 6, with the following speakers, among others:

Dr. Madge C. L. McGuinness, New York, Physical Therapy in Gynecology.
Dr. Richard Kovacs, New York, Recent Problems in the Interpretation of the Physiologic Changes in Arthritis and Their Treatment by Physical Therapeutic Measures.
Detlev W. Bronk, Ph.D., Philadelphia, Biophysics and the Future of Physical Therapy.
Dr. Frank H. Krusen, Philadelphia, Therapeutic Light Sources and Their Physiologic Action.

The midwestern section of the congress held its spring session in Peoria, Ill., May 15. Among speakers were:

Dr. Frank H. Ewerhardt, St. Louis, Treatment of Flaccid Paralysis.
Dr. Disraeli W. Kobak, Chicago, Effect of Ultraviolet in Sacro-Iliac Arthritis Associated with Sciatic Pain.
Dr. Frederick L. Wahrer, Marshalltown, Iowa, Electrosurgery in Relation to the Tonsil Problem.
Dr. John Stanley Coulter, Chicago, Evaluation of Physical Measures in Arthritis.

The western section met in Del Monte, Calif., April 23, and presented a program including the following speakers:

Dr. William J. Kerr, San Francisco, Treatment of Raynaud's Disease.
Dr. William W. Worster, San Gabriel, Calif., Use and Abuse of Colonic Therapy.
Dr. Norman N. Epstein, San Francisco, Treatment of Syphilis with Hyperpyrexia Produced by Diathermy.
Dr. John Severy Hibben, Pasadena, Physical Agents in the Treatment of Pneumonia.

Foreign Letters

LONDON

(From Our Regular Correspondent)

April 29, 1933.

The British Medical Association and the London County Council

The trouble between the British Medical Association and the London County Council over the appointment of consultants and specialists to the council's hospitals, reported in previous letters, is not the only one. The reorganizing activities of the council, which is the largest employer of physicians in the world and has only recently acquired so much power by taking over the duties of all the public health authorities of the metropolis, were bound to bring it up against the association. The council now proposes to adopt a uniform scale of charges for the treatment of outpatients, including casualties, accidents and other emergencies. But the objection is made that this encroaches on the work of the voluntary hospitals and is a direct challenge to the private physician. The new scale of charges includes the following: (1) medical and surgical, consultations and treatment, including massage and electrical treatment, 36 cents for an attendance; (2) dental attendances, provided treatment is actually given and excluding attendance for the provision and fitting of dentures, 36 cents for an attendance; (3) roentgen examinations, from $2 to $7, with 50 cents for each additional film taken at the same sitting or for a film taken away. No charges are to be made for examination after former inpatient treatment, for antenatal and postnatal attendances, or for first attendances, except for roentgen examination. The attitude of the British Medical Association is that any incursion by the London County Council into ordinary outpatient activity, comparable with the outpatient work of the voluntary hospitals, would gravely endanger the position of the private physician, unless the patients were seen only on the recommendation of their own individual physician. The British Medical Association has recently introduced a model form for use by the physician in sending his patients to a hospital, either voluntary or municipal.

The Defects of the Modern Dietary

Dr. Chalmers Watson, senior physician of the Edinburgh Royal Infirmary, delivered a lecture to the Glasgow and West of Scotland College of Domestic Science on defects of the national diet. He said that while in the past forty years the health of the nation had materially improved in some directions through improved hygiene, in other directions, such as the increasing incidence of dental disease, increasing maternal morbidity, the prevalence of tonsils and adenoids, appendicitis and allied abdominal conditions and the increased incidence of cancer, the reverse was true. There was an increasing tendency to associate these results with the changes that had taken place in the feeding habits of the people during that period. These changes were a departure from the use of fresh natural foods, reliance being placed on substitutes regarded as "just as good." But though in themselves wholesome, these substitutes lacked to a greater or lesser degree the vital properties included under the general term vitamins, which were present in fresh food. In response to the popular demand for white bread, the miller removed the most nutritious element in the wheat grain. The bulk of the milk supply had its nutritive value materially lessened by pasteurization. The natural sugar present in vegetables and fruit was replaced by an extracted and overrefined product lacking the properties of natural sugar. In general, overuse was made of artificially preserved foods. He considered that the public would be ill advised if it looked to the addition to the diet of artificially prepared vitamin preparations as a solution for the deficiency. Diet should be, so far as possible, selected from good fresh untreated milk, butter, oatmeal, a daily supply of fresh fruit, vegetables, eggs, fish and home-grown meat food.

Reorganization of Irish Hospitals on the Basis of the Sweepstake Fund

The immense sums derived by the hospitals of the Irish Free State from the gambling spirit of the world, mentioned in previous letters, have given rise to special legislation in the dail. A bill has been introduced by Dr. Ward, parliamentary secretary to the ministry for local government and public health. In 1931 a commission was appointed by the minister of justice to report on the division of the sweepstake monies between the hospitals. Many of them showed a lack of appreciation of the proper lines of development for the country's needs. The single anxiety of the majority was to obtain the largest possible award from the sweepstake funds. Building programs were in most cases hastily considered. Too many institutions specialized along the same lines, to the neglect of curative medicine. The minister would control the reorganization of the scheme as a whole. The bill would establish a hospitals commission with power to survey the existing hospital facilities and consider every application for a grant. In future medical research, institutions would be included in the sweepstake list.

PARIS

(From Our Regular Correspondent)

April 12, 1933.

The Rights and Duties of the Surgeon

The Society of Legal Medicine discussed recently the subject: "If a surgeon, during the course of an operation, discovers a lesion that he had not diagnosed previous to the operation, and that the patient did not know existed, has he the right, as the representative of the patient's interests, to perform a more complete intervention than he had planned?" In some instances patients, following an operation more mutilating than that to which they had agreed, have sued the surgeon for damages, and, in spite of the fact that health was restored, have won the suit. In principle, a surgeon has the right to perform only the operation concerning which a formal agreement was entered into with his patient, for the consent of a patient to an operation is absolutely necessary, by virtue of the principle that every person is the sole arbiter in matters affecting his own body. When, however, the patient is under anesthesia, it is impossible to interrupt the operation and to revive the patient in order to ask him his opinion. The courts have admitted that the surgeon may be content to accept the opinion of the husband in a matter involving a more extensive operation on the wife. Recently, the court of Lannion refused to allow a woman her claim for damages in the case of a surgeon who had operated on her for a tumor of the breast, although he had stated that the tumor was benign and would require only a simple excision. During the operation, however, he discovered that the tumor was a cancer. After securing the consent of the husband, he removed the entire breast and likewise excised glands in the axilla. The patient recovered but demanded 200,000 francs ($8,000) by way of damages. The court denied the claim. The courts are less inclined to admit that the consent of the wife is valid when the husband is under an anesthetic, for she is not so good a judge of a possible diminution of capacity that might result from a more mutilating operation on her husband. Then, again, the husband may be absent, and the patient, brought in an emergency to the hospital, may be alone. The medicolegalists at the meeting expressed the view that the condition of absolute necessity absolved the surgeon from all blame, even if the operation proved fatal or caused an unforeseen mutilation, but that, if

the matter was brought before the courts, the surgeon would be required to prove that such necessity existed. In case of a claim for damages being made by the patient or her family, the court should not grant an indemnity unless it was proved that the surgeon committed an unquestionable professional misdemeanor recognized by expert witnesses. A typical case is that of a patient who consented to an operation for intestinal strangulation but who, on awakening, discovered that an artificial anus had been constructed for which he had not been prepared. In such a case, if any want of dexterity on the part of the surgeon can be proved, he may be subjected to a penalty. The same is true in case of an important abdominal eventration after a laparotomy. The society discussed the case in which a surgeon is induced to operate on a patient against the patient's desire, the latter declaring that he prefers death to an operation that might save him. It is the surgeon's duty to prevent suicide. It has, however, occurred that women refuse, through fear, a laparotomy for a ruptured ectopic pregnancy, or even the simple application of forceps. In case the patient recovers, the surgeon runs no risk, but in case of accident or of death, he will have great difficulty in proving his good intentions. Some one present cited the humorous case of a man who was found hanging to a limb of a tree, life being almost extinct. A good Samaritan passing by hastened to cut the rope with his knife. The man in falling suffered a fracture of the thigh and remained lame for life. He summoned his benefactor before the courts, which condemned the latter because, in their opinion, he should have used greater precaution in rescuing the hanged man.

Proposed Reorganization of Sanitary Services

The Parti social de la santé publique, an association of physicians, hygienists and sociologists, has protested against the distribution, among a dozen different ministries, of the services connected with medicine and hygiene. There is a technical service of this kind in every ministry, which gives rise to confusion, the undue expenditure of funds and duplication of effort. The remedy appears to be a concentration within a single organization, the ministry of public health. The Academy of Medicine is under the control of the ministry of public instruction, the same as the faculties of medicine. Epizootics and the surveillance of food products are in the hands of the ministry of agriculture. The health services of the railways and other common carriers are under the supervision of the ministry of public works. The departments of war, navy and the colonies have their own medical services. A vast saving in personnel and equipment would result from an amalgamation of all these services under one management. Thus far, all that has been accomplished is the creation, within the ministry of public health, of two large commissions in which all these services have a representative, who has little authority. A long time probably will elapse before such centralization is brought about, since each of these organizations finds it advantageous to function in an isolated manner under conditions in which medicine is treated as a secondary factor.

The International Congress on Child Welfare

The Congrès international pour la protection de l'enfance will be held in Paris, July 4-9, under the chairmanship of Mr. Strauss, senator and member of the Academy of Medicine. The work of the congress will be divided into eight sections, as follows: (1) motherhood; prenatal consultations; (2) early childhood; the importance of mothers possessing a technical education in the campaign against infant mortality; (3) later childhood (children aged 3-14); supervision of the physical development of the child during the school period; (4) adolescence (ages 14-18); supervision of the physical development of the adolescent; (5) abnormal children; practical means of teaching a trade to abnormal children and of facilitating its pursuit; (6) social service; social aid for the child of school age; (7) wards of the state; organization of legal guardianship of illegitimate children; (8) various communications; questions dealing with the protection of mother and child and not coming under the head of questions proposed by the other sections. Additional information in regard to the congress may be secured by addressing Secrétariat général, 26 Bld. de Vaugirard, Paris (XV^{e}).

BERLIN

(From Our Regular Correspondent)

May 8, 1933.

The Reorganization of the Medical Profession

Dr. Haedenkamp, the Berlin plenipotentiary of the medical syndicates, has been summoned to serve as a commissary in the federal ministry of labor, to elaborate the new organization of the federal system of health insurance. Following a report on the reception of the leaders of the medical organizations by chancellor Hitler, he expressed his views on the physician in the new state. Professional politics in medical circles, in the sense of the exercise of power or the employment of force measures, will no longer exist. The influence and authority of the medical profession in the new state will be based on accomplishments and on nothing else. "It is not the array of expensive equipment nor the superabundance of medicines and remedies that effect the cure but rather the living human forces that are emitted by the personality of the physician."

Haedenkamp states further that the work of welding the medical profession of Germany into the new state is proceeding regularly in accordance with a clearly conceived plan whereby the medical profession shall be guided by a central government authority, although it will administer its own personal affairs in a general way. It is not simple to weld together the medical organizations, the leagues representing economic affairs and the professional and legal organs of the body of physicians. The medical care of persons insured in the health insurance societies must not be endangered or disturbed. The reorganization of the economic central body will be brought under the control of the state and will have to be guided by government authority. The existing aerztekammern, or chambers of physicians, will be dissolved, and the local groups will then constitute the basal structure for a reichsärztekammer, or federal chamber of physicians. The new organization of medicine will consist of two parts, one subdivision having to do with purely professional matters and political matters affecting medicine, and the second subdivision with economic affairs and social politics. With respect to the division of tasks and duties, the preeminent duties of the profession lie in the fields of the care of public health and race hygiene, or eugenics.

By using existing bodies and regulations, a legally recognized council on medical ethics and a system of health, disability and old age insurance for physicians must be set up. The existing Deutsche Aerzteversicherung may be used as a nucleus.

The whole structure can rest on the legal basis of a federal reichsärzteordnung, or a federal council on medical ethics. The physician can thus finally emerge from the reichsgewerbeordnung, or the federal industrial council, in which he is classed with industrial workers, and can attain to a legal status in keeping with the importance and the heavy responsibilities associated with the tasks that he must fulfil as the defender and promoter of public health.

Heart Surgery

Professor Stich, surgeon of Göttingen, spoke recently before the Hanover Medical Society on "Observations on Heart Surgery." One need go back no further than to Billroth to find a surgeon who regarded operations on the heart impossible. Only a year elapsed after Billroth's statement before Block of Danzig did his first work on the heart, although fifteen years passed before Louis Rehn performed the first successful heart

suture. Without operation 85 per cent of persons suffering heart injuries die, whereas 79 per cent of the persons successfully operated on are restored to full working capacity. Withdrawal of the heart from the pericardium often causes fibrillation. Injury of the coronary artery is nearly always fatal. Tension of the pericardium demands prompt intervention. From 30 to 50 per cent of patients with heart injuries die as a result of secondary manifestations of pericarditis. Bacteria that have been brought in by the trauma must be removed. Recent penetrating projectiles are usually removed; older foreign bodies are allowed to remain if they produce no symptoms. The pathologist often finds foreign bodies in the heart, though the patient did not know of their existence. Calculi of the pericardium arising from fibrinous excretions, or pericardium bodies produced by the echinococcus (about fifty cases of which are described in the literature) are not amenable to surgical treatment. In effusion into the pericardium, pain is caused more by the suddenness of the event than by the quantity of the fluid, which may be 750 cc. without grave danger. Puncture of the pericardial effusion and pericardiotomy in purulent effusion are no longer rare interventions. In all forms of pericarditis indurations may develop. In accretio pericardii, the heart appears enlarged on percussion and also in the roentgenogram; in concretio pericardii and complete adhesion of the heart to the pericardium, the heart is small and shows in the roentgenogram evident lime deposits extending into the pericardium. The prognosis in case of purely internal treatment is not favorable. The mechanical process requires elimination through operation. Thoracolysis in accretio pericardii gives good results (1.7 per cent mortality) if the diagnosis is accurate and the technic is good. Surgical intervention in concretio pericardii involves, however, a much more difficult technic and a much higher mortality (about 25 per cent). Although the results of surgical treatment in angina pectoris and heart failure (division of the depressor and the sympathetic nerves) are not encouraging, there is no reason for resignation.

Health Exposition in Berlin

In the Berlin "Sport Palace" the first Exposition of Health, Sport and Hygiene, of Greater Berlin, was opened, April 27, with an address by Ministerialrat Dr. Conti, who since the political overthrow of the Prussian administrative bureau of medicine has held a leading position. He emphasized that it is not the task of a nation to create solely model institutions for the sick and the blind. Much greater importance attaches to improving the health of the people as a whole. The purpose of this health survey is to promote that idea. The revolutionary changes in the public health system have not yet been completed. The medical profession had already shown a tendency to try to get away from overspecialization. The power of the state will exercise the necessary control in order to unite all divergent movements dealing with therapeutics, housing, nutrition and physical education on the basis of their contributions toward the improvement of the health of the people as a whole. Numerous societies, establishments and institutes in the field of hygiene have taken part in the health survey.

Activities of the German Hygienic Museum

In addition to the continuous work of the Deutsches Hygiene-Museum in Dresden, which supplies the whole German reich with material on subjects pertaining to health, mention may be made, in connection with the activities of the year 1932, of the carrying out of the annual health survey, which comprised three exhibits and numerous lectures and film presentations. During the year, three traveling exhibits were constantly on the move; namely, "Man in Health and Disease," "Healthy Women Mean a Healthy People" and "The Fight Against Cancer." In Germany these three exhibits were shown in 1932 in twenty-one places and attracted 400,000 visitors. In addition, exhibits were sent to some foreign countries, chiefly Austria, Sweden and the Netherlands. The traveling exhibits as a whole were set up in twenty-eight places at home and abroad and more than 700,000 persons visited them. More than 20,000 photographs were lent to illustrate lecture courses.

Roentgenologic Demonstrations of the Human Brain in a Living Subject

Dr. Radovici and Dr. O. Meller of Bucharest report in the *Klinische Wochenschrift* on a new method for the roentgenologic demonstration of the human brain in the living subject. They experimented with methods of demonstrating in roentgenograms the plastic relief of the central nervous system by obscuration of the spinal fluid with the aid of a contrast medium. For this purpose they injected a colloidal solution of thorium dioxide into the spinal canal or into the brain, first into the dead bodies of new-born infants and later also in rabbits, dogs and apes. The sulci between the convolutions of the brain appear as black narrow stripes, whereas the convolutions stand out in relief. The spinal cord itself appears to be limited by two black parallel bands, which correspond to the shadow-producing spinal fluid. Since, after from one to three months, the relief outlines of the central nervous system have become much paler and the dark stripes appear only as very fine lines, it may be assumed that the injected substance is gradually absorbed and disappears from the surface of the brain. The animals treated in this manner do not behave differently from the controls. The authors believe, therefore, that the favorable results justify the use of this or similar technic on man. The use of thorium salts for a demonstration of other organs has been known for several years.

PRAGUE

(From Our Regular Correspondent)

April 21, 1933.

A Physicians' Savings Bank

The annual report of the Savings Bank of Czechoslovakian Physicians has just been published. The savings bank was founded in 1906 and it has had a steady and continuous growth. The bank tries to concentrate in its hands the financial resources of Czechoslovakian physicians, veterinarians and pharmacists. It will soon have 3,000 members. The administrative center is in Prague, but there are branches in two provincial capitals, Brno and Bratislava, and one in Košice. The bank collects the savings of physicians, veterinarians and pharmacists and places them out as loans to members of the same professions who need them for investments in new offices, homes or sanatoriums. Only through the help of this institution could the central Home for Czechoslovakian Physicians have been erected in Prague. Another important function of the bank lies in the fact that it takes over the liabilities of those who do not pay regularly to the physicians and through its machinery enforces the payment of fees. This has become an important function not so much with private patients as for insurance bodies which find themselves in a difficult financial situation and do not pay their physicians in time. The physicians receive their respective amounts as loans from the bank, which are ultimately covered by the recovered payments, including the interest which is paid to the bank for the loan. The board of directors of the bank has always adhered strictly to a conservative financial policy, which has meant for physicians the conconservation of their property in spite of the turbulent times. The bank distributed a dividend of 7 per cent for 1932. In addition, it is able to use its surplus for gifts, which usually aim at some activity for the advancement of the medical profession. Two years ago a donation was made for the erection of a consultation station for young physicians and medical students; last year a gift was made toward the organization of a study on the present status of medical practice in Czecho-

slovakia. The main functions of the bank are in the hands of the heads of the Czechoslovakian medical organization and consequently the physicians are guaranteed that the bank's interest lies exclusively in the promotion of the well being of its members. The depression which has just passed has given to physicians in Czechoslovakia an opportunity to appreciate the advantages of such an institution.

A Professional Automobile Club

The physicians of Czechoslovakia have an active automobile club, which bears the name of Aesculapius. The organization now comprises about 800 members. The members have the right to use a sign on the car which gives them certain privileges but imposes also certain obligations. The sign is a red cross in a blue field with a golden snake in the middle. It is placed in the front and back of the car and can be illuminated. The sign can remain uncovered only as long as the physician is in service. Every such car must have a standard equipment for first aid to be given by its occupants in case of emergency. The traffic regulations in most large cities give the cars with the sign preference in the traffic and allow parking in places where it is prohibited to other cars. A certain lightening of the tax burden on members of the club has also been attained. Similar medical clubs have been formed in other states of central Europe and at the present time an international union of medical automobile clubs is being considered. The reason for it is that it is intended to obtain for physicians who belong to the club some relief from passport restrictions while crossing the state frontiers on medical duty. The club has been also active in the development of safety first propaganda not only among its members but also among the members of other automobile clubs. It has also deliberated on technical questions concerning first aid in the case of automobile accident, of the equipment of first aid stations, and of the organization of first aid service.

The Controversy with Sickness Insurance Bodies

The relation of general hospitals to insurance bodies is being discussed in medical circles. According to the present law on sickness insurance, the insured is entitled to treatment for four weeks in the hospital at the expense of the insurance bodies, a provision which has been used extensively by the insurance corporations because they find that hospital treatment has many advantages for their patients. The period of disablement is usually shortened by treatment in a hospital. According to the present practice, the public hospital authorities do not allow any direct interference of insurance authorities in the treatment of the insured while they are in the hospital. This is a point of dispute between general hospitals and insurance bodies, the latter maintaining that it would be advantageous for them if they could control the progress of the treatment in the hospital, as they could eliminate waste. They maintain that instances could be found wherein the patient was kept in the hospital longer than his actual situation required. They suspect that hospitals do so from financial considerations. The hospitals, on the other hand, complain that they usually receive the patient without any record of previous sickness and consequently the examination of the patient has to be done from the start. When the patient is discharged from the hospital there is usually no follow-up service which would guarantee to the hospital that the results obtained will be permanent. The result of this situation was a tendency on the part of some insurance bodies to erect hospitals of their own. Such an institution has been erected in Prague, where the respective sickness insurance body claims excellent results. The medical profession does not look favorably on this movement. It fears that the standard of service in the hospitals might be endangered through the interference of lay people putting into the leading positions of the hospitals physicians not so much according to their professional qualification as according to their political influence. Some form of readjustment in the present hospital service must be made aiming at a closer connection of hospitals with the insurance bodies if the construction of special hospitals for the insurance corporations is to be prevented. This is generally admitted, and ways are being considered by which this can be carried out most advantageously.

The League Against Rheumatism

The report of the Czechoslovakian League Against Rheumatism was presented at a recent annual meeting of this organization. The league was organized in Czechoslovakia in 1927 as a national committee of the international league for the campaign against rheumatism, which has its seat in Amsterdam. The main activities of the league were concentrated on the advancement of knowledge on the occurrence and treatment of rheumatism in Czechoslovakia. An attempt was made to collect data on rheumatism among the insurance patients. To insure a correct diagnosis, a census of only those who have been sent to watering places for the treatment of rheumatism was carried out among the insurance bodies of the whole state. The league published last year a treatise on rheumatism. Besides many lectures before medical societies by the officers of the league, a graduate course for physicians on the treatment of rheumatism was organized in Prague. The erection of a special consultation station for persons having rheumatism is being prepared in one of the large industrial centers of Czechoslovakia. The league is pleased that its campaign against rheumatism brings many rheumatic patients to Czechoslovakia for treatment.

Cleanliness Week

The Czechoslovakian Red Cross organizes every year at Easter an educational week for the advancement of the health of the people. A feature of these campaigns is the support which the Red Cross has been able to obtain from the public authorities. The week is terminated every year by a public session in the parliament which is presided over by the president of the chamber of deputies and is attended by many high officials of the state, including the president of the republic. This year the slogan for more cleanliness was used with the idea that the unemployed could help improve the cleanliness of homes, streets, markets and public lots. This slogan seems to have been a particularly happy choice because great interest was aroused by the campaign. The ceremonies this year impressed authorities so much that a proposition for a similar movement on an international basis is being considered for the world conference of the League of Red Cross Societies in Tokyo next year.

A New Orthopedic Department

A new orthopedic department has been opened in Brno at the medical school. Orthopedic departments have been opened in recent years in Prague and Bratislava. The services of a young surgeon, Prof. B. Frejka, have been secured for the direction of this new institution. The department has 125 beds. The department is not to confine its activities merely to hospital work. Stress is to be laid on preventive work. The clinic will endeavor to become the center of scientific research. Its main function will be the education of young physicians. The clinic will also cooperate with other institutions for the care of crippled children and function as a center for the treatment of complicated cases.

British Surgeons Visit Prague

The Moynihan Chirurgical Club of Great Britain was lately the guest of the first surgical clinic of the Czech faculty of medicine of Prague; twenty-eight members of the club with their families visited the surgical institutions of Prague. The program comprised lectures and demonstrations, which were organized by Prof. A. Jirásek, chief of the first surgical clinic of Prague. The visitors attended operations in the clinics and visited also the State Institute of Public Hygiene of Prague,

the new general hospital of the city of Prague and other institutions. This visit was appreciated by the medical profession of Czechoslovakia. This was expressed in several speeches.

VIENNA

(From Our Regular Correspondent)

April 20, 1933.

Social Insurance in Austria

Concerning the organization of social insurance in Austria further details have been announced, from which the following figures have been taken. The many krankenkassen scattered throughout the country may be divided into six groups: (1) industrial workers, with about 1,000,000 members and compulsory insurance; (2) agricultural workers, 300,000; (3) mercantile and private employees, 280,000; (4) government employees, 170,000; (5) employees of transportation companies, including railways, 170,000, and (6) employees of the municipality of Vienna, 45,000, making a total of about 1,965,000 members. Of this number, 100 per cent are insured against disease but only 60 per cent are insured against loss of employment; that is to say, about 40 per cent are enrolled under family insurance. The average monthly income of members of the krankenkassen is 156 shillings, or about $22; the highest monthly income is only 200 shillings, or about $30. On this basis, the insured receives a weekly sick benefit during illness or a lump sum compensation in case of accident. The members pay two thirds and the employer one third of the monthly insurance premiums, which average about 24 shillings, or $3.60. The insured member thus pays from 10 to 13 per cent of his income to the krankenkasse, the maximum figure being 28.50 shillings, or $4.28, for workers. In the case of employees who carry also old age pension, the monthly premium amounts to about 14 or 15 per cent of the wages received. The total receipts of the krankenkassen in 1931 were 207,000,000 shillings, or $31,050,000, 93 per cent of which sum was expended for insurance benefits, 60,000,000 shillings for medical aid, 30,000,000 for medicines, 41,000,000 for hospital care and 62,000,000 for sick benefits. For accident insurance, 36,000,000 shillings was received and expended.

Refusal of Roentgenologists to Participate in Congress to Be Held in Germany

The political upheaval in Germany, with its racial intolerance, has received an unusual disavowal on the part of an eminent scientific body in Austria. For the Congress of the German Roentgenologic Society, which is about to convene in Bremen, Professor Kienböck, a recognized authority in this field, was chosen last year to serve as chairman. He is also president of the Austrian Roentgenologic Society in Vienna. Since his mother was Jewish, word came from Germany that it no longer seemed desirable that he should serve as chairman. Thereupon, Professor Kienböck, deeply indignant, naturally resigned his position. But the Austrian Roentgenologic Society took the side of its president and decided, after this affront, to refuse to participate in the sessions of a society that regards anti-Semitic considerations as of more importance than scientific problems. The congress in Bremen will therefore be held without representation from the Vienna school, which occupies a preeminent position in the field of roentgenology.

The Rôle of the Tonsils

In an address before the Gesellschaft der Aerzte in Vienna, Dr. S. Peller discussed the results of his study of 17,000 children with respect to the influence of the tonsils on growth and weight. The children were those inspected by the Vienna Institute for Vocational Guidance, following their completion of the elementary school, and their ages ranged from 13½ to 16. He found that 13 per cent of the children had had the tonsils removed (11 per cent of the boys and 16 per cent of the girls); 11 per cent of the total still had hypertrophic tonsils. Peller found that the male children with hypertrophic tonsils were several centimeters (from 2 to 4) shorter and from 2 to 4 Kg. lighter than children of corresponding age who were subjected to tonsillectomy several years previously. In the girls, the conditions were somewhat different. The tonsillectomized girls, aged from 14 to 14½ years, were from 2 to 2.5 Kg. heavier than the girls who have retained their tonsils. The height of girls whose tonsils were removed years previously was not materially different from that of girls who had hypertrophied tonsils. The girls with hypertrophied tonsils began later to menstruate than those whose tonsils were removed early. At the age of 14, 36 per cent of the former and only 18 per cent of the latter were not yet sexually mature, as compared with a general average of 23 per cent for girls of corresponding age, and at the age of 14½ the figures were 27, 14 and 15 per cent, respectively. Dr. Peller concludes from these observations that the tonsils have a regulatory mechanism affecting growth, as a retarding factor—at least during the ages 13-16 years, particularly in boys, whereas in the girls they appear to affect only the weight. Removal of the tonsils produces in boys greater height, but in girls only greater weight, the height not being influenced. The tonsils affect the onset of sexual maturity in girls, not that their removal causes an acceleration of sexual maturity but merely tends to make the onset correspond more closely to normal. Scarlet fever and diphtheria are noted much more frequently in the history of juveniles who have hypertrophied tonsils or who have undergone tonsillectomy than in the general average of the same age. Dr. Peller concludes that the increased predisposition to scarlet fever and diphtheria in children with hypertrophied tonsils is not due to such hypertrophy but that the two conditions are parallel manifestations. In children who had had scarlet fever or diphtheria, or both diseases, pathologic tonsils were much more frequent than in children who had not had either scarlet fever or diphtheria.

Infectious Diseases in Austria

The report of the Central-Gesundheits-Amt for Austria reveals that during the months of January and February, 1933, infectious diseases in Vienna show a slow but steady decline with respect to the most important types. Scarlet fever receded about 15 per cent, diphtheria 16 per cent, typhoid 5 per cent, paratyphoid 12 per cent, chickenpox 25 per cent and poliomyelitis 30 per cent, as compared with the end of last year. Not a case of genuine smallpox or cholera was observed. In the whole territory of Austria, with 6,750,000 inhabitants, only 971 cases of typhoid, 804 of paratyphoid and 80 of dysentery were observed last year. Through the vigilance of the public health service the carriers of bacilli have been controlled and their employment in many instances has been prohibited (particularly in shops where food products are sold) and in other cases has been greatly restricted.

Marriages

CHARLES T. YARINGTON, Moravia, N. Y., to Miss Florence Jane Hutchinson of Ardmore, May 6.

ROYALE H. FOWLER, Newark, N. J., to Mrs. Pauline M. Perrine of Princeton, April 21.

WILLIAM COPELAND COOK, Cincinnati, to Miss Lucille Van Meter of Delaware, March 24.

BENJAMIN HORTON KENDALL, Shelby, N. C., to Miss Ruby Spratt of Marion, May 1.

JACOB NATHANIEL BAILEY to Miss Nell Cunliff, both of Paducah, Ky., May 8.

L. WILLIAM MORSMAN to Miss Mabel Hay, both of Hibbing, Minn., recently.

Deaths

John Chalmers Da Costa ⊕ for about forty-five years a member of the faculty of Jefferson Medical College, died at his home in Philadelphia, May 16, following a long illness due to arthritis deformans. Dr. Da Costa was born in Philadelphia in 1863. He graduated from the University of Pennsylvania in 1882 and from Jefferson Medical College in 1885, in which year he became a resident physician at the Philadelphia Hospital and in the following year an assistant physician. He was appointed an assistant demonstrator in anatomy at his alma mater and an assistant surgeon at the Jefferson Hospital in 1887, a demonstrator of surgery in 1891, clinical professor of surgery in 1898, and professor of surgery in 1900. In the following year Dr. Da Costa was made Samuel D. Gross professor of surgery, which chair he occupied until the time of his death. He has been surgeon to the Philadelphia Hospital since 1895 and to St. Joseph's Hospital since 1896. Among his best known writings is his Manual of Modern Surgery, published in 1895, which has gone through many editions. He was editor of the American edition of Gray's Anatomy in 1905 and of the English edition of Zuckerkandl's Operative Surgery in 1889, and a frequent contributor to the periodic literature. Dr. Da Costa was a member of the College of Physicians of Philadelphia, the American Surgical Association, the Society of Clinical Surgery, and an associate member of the Society of Gynecology and Surgery of Bucharest and fellow of the American College of Surgeons. He served gratuitously for about thirty-five years as surgeon for the city firemen of Philadelphia and of the Firemen's Pension Fund. His international reputation as a surgeon brought him many honors. Under the auspices of the Philadelphia County Medical Society, Da Costa Day was inaugurated in 1930, and the John Chalmers Da Costa Foundation established for the purpose of furthering graduate teaching under the auspices of the county society. Dr. Da Costa was a commander in the U. S. Naval Reserve forces, and during the World War accompanied President Wilson to France.

Clarence Erford Coon ⊕ Syracuse, N. Y.; Syracuse University College of Medicine, 1898; professor of orthopedic surgery at his alma mater; past president of the Onondaga County Medical Society and the Syracuse Academy of Medicine; fellow of the American College of Surgeons; served during the World War; on the staffs of the Hospital of the Good Shepherd, Syracuse University; Syracuse Memorial Hospital, Syracuse Free Dispensary, and the New York State Reconstruction Home, West Haverstraw; aged 65; died, April 22, of linitis plastica, anemia and coronary thrombosis.

Ray Connor ⊕ Detroit; Johns Hopkins University School of Medicine, Baltimore, 1901; formerly assistant clinical professor of ophthalmology, Detroit College of Medicine and Surgery; member of the American Academy of Ophthalmology and Oto-Laryngology and the American Laryngological, Rhinological and Otological Society; fellow of the American College of Surgeons; served during the World War; surgeon to the Children's Free and Providence hospitals; aged 56; was found dead, April 21, of heart disease.

Owen Copp, Philadelphia; Harvard University Medical School, Boston, 1884; member of the American Psychiatric Association and the New England Society of Psychiatry; executive secretary of the Massachusetts Board of Insanity, Boston, 1899-1911; superintendent of the Massachusetts Hospital for Epileptics, Monson, Mass., 1895-1899; physician in chief and administrator, Pennsylvania Hospital for Insane, Philadelphia, 1911-1922; aged 75; died, April 18, in Seville, Spain, of heart disease.

Jefferson H. Wilson ⊕ Beaver, Pa.; Bellevue Hospital Medical College, New York, 1876; past president of the Beaver County Medical Society; fellow of the American College of Surgeons; on the staffs of the Rochester (N. Y.) General Hospital, Beaver Valley General Hospital, New Brighton and the Providence Hospital, Beaver Falls; aged 82; died, April 5, of cerebral hemorrhage.

Isaac Jay Furman, New York; Syracuse University College of Medicine, 1906; member of the American Psychiatric Association; formerly associate clinical professor of psychiatry, Columbia University College of Physicians and Surgeons; medical superintendent of the Manhattan State Hospital, Wards Island; aged 54; died, May 5, of cerebral hemorrhage.

James M. Wright ⊕ Denison, Kan.; Kansas Medical College, Medical Department of Washburn College, Topeka, 1902; fellow of the American College of Surgeons; president of the Jackson County Medical Society; for twenty-five years a medical missionary in China; aged 62; died, February 18, of bronchopneumonia.

Losey Lynn Harding ⊕ Frankfort, Ind.; Indiana University School of Medicine, Indianapolis, 1917; past president and secretary of the Clinton County Medical Society; on the staff of the Clinton County Hospital; aged 45; died, April 28, in the Methodist Hospital, Indianapolis, of uremia and interstitial nephritis.

Joseph Max Irwin ⊕ St. Augustine, Fla.; Washington University School of Medicine, St. Louis, 1902; past president and secretary of St. Johns County Medical Society; served during the World War; on the staff of the Flagler Hospital; aged 61; died suddenly, April 19, of heart disease.

Virgil Charles Kinney, Wellsville, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1902; medical superintendent of the Wellsville Sanatorium; aged 59; died, April 26, in St. Petersburg, Fla., of metastatic carcinoma of the spine and liver and bronchopneumonia.

Gideon Johannes Ferreira ⊕ Duluth, Minn.; State University of Iowa College of Medicine, Iowa City, 1920; county health officer; formerly health officer of Aurora; aged 38; died, April 13, in St. Luke's Hospital, of pulmonary embolism following an operation on the gallbladder.

James Daniel Currie, Hico, Texas; George Washington University School of Medicine, Washington, D. C., 1906; member of the State Medical Association of Texas; served during the World War; aged 61; died, March 9, in a hospital at Stephenville, of pneumonia.

Alphonso Isom ⊕ Dumas, Ark.; St. Louis College of Physicians and Surgeons, 1906; past president of the Desha County Medical Society; served during the World War; physician in charge of the Dumas Hospital; aged 47; died, April 24, of heart disease.

James P. T. Stephens, Vaiden, Miss.; Tulane University of Louisiana Medical Department, New Orleans, 1900; member of the Mississippi State Medical Association; county health officer; aged 56; was killed, April 29, in an automobile accident.

George W. Mitchell ⊕ Hornell, N. Y.; Syracuse University College of Medicine, 1909; member of the city board of health; on the staffs of St. James Mercy Hospital and the Bethesda Hospital; aged 49; died, April 26, of heart disease.

Albert Jacques St. Germain, Chicago; Rush Medical College, Chicago, 1921; aged 38; on the staff of St. Luke's Hospital, where he died, April 28, as the result of injuries received in an elevator accident in the building in which he resided.

Horace G. Harvey ⊕ Denver; Missouri Medical College, St. Louis, 1887; formerly professor of surgery, University of Colorado School of Medicine; aged 70; died, April 15, of cerebral hemorrhage and chronic nephritis.

Esther Anne Ryerson, Dayton, Ohio; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1903; aged 79; died, April 19, at the Orchard Springs Sanitarium, of uremia.

Christian Jacob Rohwer ⊕ Seattle; University of Pennsylvania School of Medicine, Philadelphia, 1921; aged 42; died, April 16, in the Virginia Mason Hospital, of carcinoma of the sigmoid and pulmonary embolism.

John A. Jones, Tonkawa, Okla. (licensed, Oklahoma, under the Act of 1908); member of the Oklahoma State Medical Association; aged 59; died, April 19, in the Wesley Hospital, Wichita, Kan., of carcinoma.

Joseph Sarvis Dusenbury, Conway, S. C.; Medical College of the State of South Carolina, Charleston, 1890; member of the South Carolina Medical Association; aged 66; died, May 1, of pneumonia.

Henry Adoniram Vann, Boston, Ga.; University of the City of New York Medical Department, 1871; member of the Medical Association of Georgia; aged 83; died, April 17, of cerebral hemorrhage.

Verdo Benjamin Gregory, Tulare, Calif.; College of Physicians and Surgeons, Medical Department Kansas City University, Kansas City, Kan., 1897; aged 63; died, April 15, of angina pectoris.

Ernest Clifford Fish ⊕ Melrose, Mass.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1896; aged 65; died, April 25, of arteriosclerosis, chronic myocarditis and cardiac asthma.

Harley Edgar MacDonald, Redding, Calif.; Ohio Medical University, Columbus, 1906; member of the California Medical Association; aged 54; died suddenly, April 20, of coronary embolism.

William Lawrence Burns ⊕ Cumberland, Md.; University of Maryland School of Medicine, Baltimore, 1908; on the staff of the Memorial Hospital; aged 50; died, April 1, of coronary occlusion.

Adam Donaldson Wilsōn, Fresno, Calif.; University of Edinburgh Faculty of Medicine, Edinburgh, Scotland, 1886; aged 69; died, March 12, of aneurysm of the abdominal aorta.

Allen Salter ⊕ Lena, Ill.; College of Physicians and Surgeons, Chicago, 1893; aged 68; died, April 22, in Freeport, of chronic myocarditis, arteriosclerosis and cerebral thrombosis.

Napoleon B. Beakley, England, Ark.; University of Arkansas School of Medicine, Little Rock, 1893; president of the school board; aged 69; died, April 15, of heart disease.

William Joseph Lee, Panama City, Fla.; Kentucky School of Medicine, Louisville, 1893; member of the Florida Medical Association; aged 61; died, April 22, of heart disease.

Fred William Schecher, St. Bonifacius, Minn.; Chicago College of Medicine and Surgery, 1910; aged 48; died suddenly, April 7, of coronary disease and hypertension.

Daniel Alexander McClenahan, Hamilton, Ont., Canada; Trinity Medical College, Toronto, 1894; district health officer of Hamilton; aged 66; died suddenly, March 4.

John Joseph Kosker, Nanticoke, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1920; aged 39; died, January 25, of influenza and acute myocarditis.

Joseph C. De Wane ⊕ Wolf Point, Mont.; Milwaukee Medical College, 1909; aged 50; died, May 2, of erysipelas and adenitis of the cervical glands.

Robert W. Bowling, South Pasadena, Calif.; University of Louisville (Ky.) School of Medicine, 1893; aged 61; died, April 18, of cerebral hemorrhage.

Edward Joseph Sweeney, Springfield, Mass.; Jefferson Medical College of Philadelphia, 1907; aged 54; died, March 14, of coronary thrombosis.

Edwin Nathan Johnston, Minneapolis; State University of Iowa College of Medicine, Iowa City, 1895; aged 64; died, April 10, of heart disease.

Joseph Dallas Smith, Columbus, Ohio; University of Wooster Medical Department, Cleveland, 1880; aged 88; died, April 26, of heart disease.

Peter E. Brown, Ste. Anne de Bellevue, Que., Canada; McGill University Faculty of Medicine, Montreal, 1863; aged 96; died, February 28.

Walter S. Hunter, Greenwood, Del.; Medico-Chirurgical College of Philadelphia, 1904; aged 51; died suddenly, April 23, of heart disease.

Joseph T. Arthur Gauthier, Valleyfield, Que., Canada; Laval University Faculty of Medicine, Quebec, 1894; aged 66; died, February 5.

Henry Johnson Arnold, Barnesville, Ohio; Ohio Medical University, Columbus, 1898; aged 64; died, April 26, of cerebral hemorrhage.

Francis Octave Eugene Larue, St. Flavien, Que., Canada; Laval University Faculty of Medicine, Quebec, 1884; aged 73; died in January.

Leslie A. Woolf ⊕ Ravenna, Ohio; Medical College of Ohio, Cincinnati, 1905; aged 54; died, April 30, of cerebral hemorrhage.

James Simon Kennedy, Medford, Mass.; Boston University School of Medicine, 1894; aged 66; died, April 4, of cardiac insufficiency.

Fred Wilson Bush, Van Horne, Iowa; Barnes Medical College, St. Louis, 1897; aged 62; died, April 12, of hypernephroma.

James Duncan Campbell ⊕ Grand Rapids, Mich.; Detroit College of Medicine, 1896; aged 72; died, May 1, of angina pectoris.

George F. Dinsmore, Jacksonville, Ill.; Kentucky School of Medicine, Louisville, 1894; aged 66; died, April 19, of heart disease.

Walter Warder Dye, Ewing, Ky.; Hospital College of Medicine, Louisville, 1889; aged 84; died, April 27, of tuberculosis.

William Henry Greene, Boston; Tufts College Medical School, Boston, 1896; aged 55; died, April 24, of gastric hemorrhage.

Rayman Harmon, Grand Rapids, Mich.; Detroit College of Medicine, 1894; aged 66; died, April 28, of heart disease.

Ellis H. Adams, Porterdale, Ga.; Atlanta Medical College, 1882; aged 80; died, February 21, of carcinoma.

Bureau of Investigation

THE ADLER TREATMENT

Another Flier in the Cancer-Cure Field

For some time inquiries have been coming in regarding the so-called Adler treatment for cancer. A letter just received (May 6) from Dr. Benjamin S. Levine of Brooklyn is somewhat typical. Dr. Levine writes in part:

"I called to see a patient of mine, who has an extensive metastatic cancer of the breast with marked cachexia, and they showed me a pamphlet issued by the Adler Laboratories of 591 Summit Avenue, Jersey City, New Jersey, the title of this pamphlet being 'Adler Treatment of Neo-plastic Diseases.' The name of a Dr. William J. Poulin is mentioned as the 'medical director.'

"This laboratory furnished these people with a fancy blue bottle with a silver label in which there were some hundred red-colored capsules, which contained a gelatinous substance, for which they paid $10.00. I would appreciate any information on this matter that may be on file at your office."

The "Adler Treatment of Neo-plastic Diseases" is said to have been "perfected" by one Louis Adler, who seems to have been in the "cancer cure" business for some years. Louis Adler lives in Newark, N. J., but the so-called Adler Laboratories, Inc., operate from Jersey City, N. J.

Can Cancer Be Conquered?

Write for Dr. Poulin's new book for the truth about this disease. It will open your eyes to the facts about cancer and its treatment. There is no charge for Dr. Poulin's frank and authoritative book. Write for it now if you would help yourself or some stricken relative or friend. Address William J. Poulin, M. D., Adler Laboratories, 591 Summit Avenue, Jersey City, N. J.

An advertisement that appeared in an Ohio paper in the spring of 1932.

In 1921 a Newark, N. J., newspaper reported that Louis Adler of that city had been arrested for practicing medicine without a license in connection with the exploitation of an alleged cure for cancer. Adler was reported to have been found guilty and fined $200 and costs. From Adler's Newark address he has put out a line of "patent medicines," among them being "Adler's Wonder Salve," "Adler's Blood Purifier" (which seems to be another "cancer cure") and "Adler's Stomach Cleanser."

Adler Laboratories, Inc., is a New Jersey corporation whose certificate was filed in April, 1932, with an authorized capital of fifteen shares of Class A and forty shares of Class B stock, both being of no par value. The incorporators and officers were reported to be:

LOUIS ADLER, President	ABRAHAM SEPENUK, Secretary
JACOB LEVY, Vice-President	LOUIS FORT, Treasurer

Louis Adler was said to hold nine shares of Class A and one share of Class B stock, while each of the other three men were said to hold two shares of Class A and eight shares of Class B. Louis Fort has been described as an electrical contractor, and Jacob Levy and Abraham Sepenuk as lawyers.

The medical director of the Adler Laboratories is William J. Poulin, M.D. Dr. Poulin was born in 1884 and holds a diploma from Fordham University School of Medicine, 1912. He is licensed to practice in New York and New Jersey. He is not a member of his local medical society or, of course, of

the American Medical Association. On one of Dr. Poulin's professional cards his address is given as 1001 Park Avenue, Woodcliff, N. J. According to the same card, Dr. Poulin is "Especially Interested in Cancers, Ulcers, Hemorrhoids, Diabetes, Hay Fever, Asthma and Allied Allergic States."

Adler Laboratories, Inc., sends out a twenty-two-page booklet as part of its advertising. According to this booklet, Louis Adler is a Hungarian chemist who, "during the course of his researches and experiments, developed a theory" that cancer is due to "the accumulation in the system of poisonous waste matter." The booklet quotes indiscriminately such scientific extremes as W. Arbuthnot Lane, J. H. Tilden, William F. Koch, and William J. Mayo and Francis Carter Wood.

Nowhere in the booklet is there any information on what constitutes the Adler treatment, although an entire page of the booklet is devoted to the alleged answer to a question which forms the caption of the page "What Is the Adler Treatment?"

Excerpts of Report by Dr. Bela Teglassy
CHIEF PHYSICIAN, ASSISTANT PROFESSOR OF THE CLINIC OF THE UNIVERSITY OF BUDAPEST

My dear Mr. Adler:

I did not desire to give an opinion regarding your treatment until I had proceeded far enough in my experiments to be able to render an accurate report of the results.

I concentrated my efforts on cancer and ulcers as you requested.

I have reached the point where in about four to six weeks I shall insert an article in one of the newspapers concerning my experiments. I shall forward a copy of this article to you.

I plan to use the following headline in this article: "Medicinal Handling and Cure of Cancer and Ulcers Through the Digestive Organs." On describing the wonderful effects of the remedy, I shall refer to it as the invention of our compatriot, Louis Adler, now living in Newark, New Jersey, with the aid of an assistant professor of the clinic.

Experience in the United States and also here up to the present, shows that it is a wonderful remedy.

If you agree with me as to the writing of that article, please inform me of your consent.

I am not sparing time, energy and work and shall not tire until we convince the world of the results that are achieved by your remedy.

I am at work with heart and soul and all my knowledge, and we cannot but succeed.

In a short time the world will know your remedy.

My only request to you now is to send me more of the capsules so that I may continue my work without interruption.

I am confident that when I publish my article in the paper I shall be besieged for the remedy.

(Signed) ***Dr. Bela Teglassy***

Photographic facsimile (greatly reduced) of the alleged letter of Dr. Béla Téglássy to Adler.

The nearest the booklet comes to giving information on this point is a vague statement to the effect that the Adler treatment is a compound "prepared in capsule form entirely of organic products containing no drugs and no poisons." With each booklet that is sent out is a four-page diagnosis blank, typical of those used by mail-order medical concerns. It is emphasized that it is unnecessary for any patient to come to New Jersey, and the statement is made in italics:

> *"The Adler treatment can be administered at home by the patient himself, or by some member of his household."*

The prospective patient is warned that should he consult the physician who has treated him and seek his aid in filling in the diagnosis blank, he should not "permit him [the family doctor] to discourage you in the Adler treatment." It appears that the Adler treatment, although based on the theory that cancer is due to "the accumulation in the system of poisonous waste matter," differs according to the location of the cancer. To those who have an "external" cancer the cost for a treatment is $15; to those with an "internal" cancer the cost is but $10.

In the same booklet issued by the Adler Laboratories, much space is devoted to the reproduction of what is claimed to be a report by Dr. Béla Téglássy of Budapest. A letter purporting to be from Dr. Téglássy to Adler is reproduced, and a notary public of New Jersey swears that it is a true translation "of the original written in the Hungarian language by the Chief Physician and Assistant Professor of the Clinic of the University of Budapest, Dr. Béla Téglássy." In this letter Dr. Téglássy states, in effect, that after experimenting with Adler's "cancer cure," he had reached the point where, in a short time, he was going to "insert an article in one of the [Budapest?] newspapers concerning my experiments." The letter states further that Dr. Téglássy plans to use "the following headline in this article: 'Medicinal Handling and Cure of Cancer and Ulcers Through the Digestive Organs.'" Dr. Téglássy is also quoted as stating that he intended to refer to the cancer cure "as the invention of our compatriot, Louis Adler, now living in Newark, N. J." The letter closed with the request on the part of Dr. Téglássy that Adler send him some more of his "treatment" because, the doctor stated, he was confident that when he published his article in the paper, he would be "besieged for the remedy."

The Bureau of Investigation looked into this matter and learned several things of interest. It found first that Dr. Béla Téglássy seems to be much more important in politics than he is in medicine. In 1931 Dr. Téglássy was elected in a provincial district to the House of Deputies. The Bureau of Investigation received, also, a letter from the Dean of the Medical Faculty of the Royal Hungarian Pázmány Péter University of Budapest, stating that Dr. Téglássy was never assistant professor in that institution and was never in charge of its cancer research work. It appears that Dr. Téglássy did serve as an unsalaried junior in the dermatological clinic for two years and as a salaried junior for the next two years. In the last year of his service he had the title of unpaid assistant, and for a time it was his "duty to look after the servants, nurses, household and kitchen." Obviously, the attempt on the part of Adler to drag in the good name of the University of Budapest is without the remotest justification.

Dr. Szado, the dean, also sent the Bureau of Investigation a letter written by Dr. Téglássy himself, in which he attempts to explain his episode of the Adler treatment. The letter is not convincing. According to Dr. Téglássy, some five or six years ago a Mr. Adler visited him and presented him with "a gelatinoid anti-cancer preparation" which, according to Adler, was being used with very good results in the United States. As Dr. Téglássy had some cancer patients in his *private practice*, he accepted some of the Adler preparation, sent some of it to a chemical laboratory, and having been informed that the laboratory could not determine the exact composition of the preparation, but that it was an extract of vegetable material and non-poisonous, he administered the preparation to his patients, who, he claimed, "after a few months' use reported a certain sedative effect." Dr. Téglássy stated further that the Mr. Adler who brought the preparation asked him to give a few lines telling that the preparation had shown a good effect, so:

> "On my prescription blank I gave him a few lines in which, according to my best recollection, I wrote that the offered gelatinoid vegetal preparation has been used by my patients suffering with cancer and after its use they have felt a certain sedative effect."

Dr. Téglássy's letter says further that a few months after this the Adler person disappeared, and, having no more of the Adler preparation, he (the doctor) was unable to continue experimenting with it. Dr. Téglássy expresses astonishment to learn that his name is being used in an advertising campaign in the United States, and, believing it to be a misrepresentation, he would protest energetically to the American legation that the use of his name be stopped. Dr. Téglássy closes his letter with the acknowledgement that he did not administer the Adler preparation in the University Clinic, but only in his private practice.

Of practical interest to the sufferer from cancer is a report by Dr. Ira I. Kaplan, Director of the Division of Cancer, Bellevue Hospital, New York City, who tried the Adler treat-

ment in three cases which had been selected by medical director Poulin as being most likely not to show harmful results. Dr. Kaplan reported last fall: "We gave his treatment as he directed it. All three patients died horribly and miserably." In two other cases treated under Dr. Kaplan's supervision, both died.

Correspondence

"TREATMENT OF BURNS WITH GENTIAN VIOLET"

To the Editor:—In the article entitled "Treatment of Burns with Gentian Violet" (THE JOURNAL, April 22, p. 1219), Connell, Fatherree, Kennedy and McSwain report good results in the treatment of five patients with from 5 to 9 per cent surface area involvement, with 1 per cent gentian violet in a tragacanth jelly base.

In THE JOURNAL, April 16, 1932, V. P. Blair, W. G. Hamm and I reported the use of a 5 per cent sodium chloride jelly in the care of burned patients: "Since March, 1930, we have used as a dressing a water-soluble jelly, to which has been added from 2 to 5 per cent sodium chloride; this has proved satisfactory in many cases," we stated, and, in a footnote, "Besides the present strength of 5 per cent sodium chloride, the following ingredients have been used: 2 to 5 per cent magnesium sulphate, 2 per cent gentian violet, thymol, eucalyptol, and 2 per cent sodium chloride."

In the usual case we have felt that the sodium chloride jelly would suffice and have been a little prompted in the matter by the troublesomeness of the staining of the gentian violet and its prolonged evidence. However, in some badly infected cases, gentian violet may prove to be an effective agent, and we have had apparent success with it on some infected skin grafts when other care seemed to fail. The saline jelly has somewhat the effect of a hypertonic wet dressing and we have used it in several types of infected wounds.

Connell and his associates state that "no contraction scars remained" in any case; but it is undoubtedly true that if the full thickness of the skin is completely lost over a large area there will be scar deformity, if spontaneous healing is awaited, regardless of how the wound is treated.

J. B. BROWN, M.D., St. Louis.

"SAFETY PIN IN VAGINA OF CHILD"

To the Editor:—In THE JOURNAL, April 15, appears an interesting account of a safety pin in the vagina of a 4 year old child whose hymen was imperforate. The author, Dr. Nixon, supplements his communication with a list of similar cases culled from the literature. May I add another? In the case of a child, aged 2½ years, seen by me about ten years ago, a mucopurulent vaginal discharge had persisted for six months in spite of treatment with antiseptic and astringent douches and instillations by a well known pediatrician, who had regarded the condition as a benign vulvovaginitis, as the smears were negative. Under this therapeutic regimen the condition would ameliorate and increase, and during one of these remissions the child was brought to Atlantic City. After arrival here a sharp exacerbation occurred. When I saw the patient, examination disclosed the hymen imperforate except for a small opening in its upper half. On the passage of a probe through this aperture, well into the vaginal cavity, its end came in contact with some hard, metallic body. The hymenal opening was then enlarged, and by forceps a closed, blackened safety pin, about 2 inches long, was easily removed. In a few days the discharge ceased, without further treatment. No adequate explanation could be found as to how the pin gained entrance into the vaginal canal, although it might possibly have been introduced by a nurse, discharged by the mother some months previous, because of misconduct.

D. J. MILTON MILLER, M.D., Atlantic City, N. J.

PORTRAYALS OF DISEASE IN FICTION

To the Editor:—In the April 29 issue of THE JOURNAL, Dr. Phillip E. Rothman cites an instance of the portrayal of the symptoms of a disease in a fictional character appearing before the malady was systematically studied and recorded authoritatively in medical literature, and quotes the character Joe, the fat boy, in Dickens's Pickwick Papers, who was a victim of narcolepsy. May I be permitted to point out another character by the same author that showed sharp power of observation by the writer? In 1848 Dickens, in Dombey and Son, chapter XXXVII, capably described the last illness of Mrs. Skewton. His delineation of her speechless state, her staring at the ceiling, the making of inarticulate guttural sounds in answer to questions, well depict the symptom complex of hemiplegia. The gradual recovery of some motion in the right hand, though not of speech, shows fidelity to nature in a remarkable degree, particularly admirable when emanating from the pen of a nonmedical writer.

In 1861 (thirteen years later) Paul Broca published the memoir wherein he propounded that aphasia is associated with injury to and consequent inaction of the posterior portion of the third frontal convolution on the left side of the brain. This area is now universally known as Broca's space. Curiously enough, the scholarly Dr. Oliver Wendell Holmes was not clearly informed regarding the circumstances; for in the course of an address delivered before the Phi Beta Kappa Society of Harvard University, June 29, 1870, he said: "A particular spot has been of late pointed out by pathologists, not phrenologists, as the seat of the faculty of speech. I do not know that our sensations ever point to it."

J. A. HAGEMANN, M.D., Pittsburgh.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

USE OF POISON IVY ORALLY AND PARENTERALLY IN DESENSITIZATION

To the Editor:—Kindly discuss the efficacy of poison ivy extracts used hypodermically in cases of dermatitis venenata, and the use of tinctures by mouth in these conditions. Are there any serious bad effects from these injections? Kindly omit name. M.D., New York.

ANSWER.—The idea that chewing poison ivy leaves has a value in preventing dermatitis is a time honored one. Schamberg in 1916 and 1919, advocated the use of:

Tincture of rhus toxicodendron	1 cc.
Alcohol	5 cc.
Syrup of orange, to make	100 cc.

One drop of this to be taken in half a glass of water half an hour after a meal, two drops in the same way after the next meal and so on, increasing one drop with each dose until twenty-one drops were taken. After this, the dose to be a teaspoonful after each meal throughout the season. Clinical reports on the method were encouraging, many patients stating that after taking the treatment they had been exposed to poison ivy without suffering dermatitis, though highly susceptible previously. For cases of dermatitis, he advocated the same treatment, except that the dose was to be increased two drops at a time up to eighteen, then a teaspoonful dose until the attack was ended. The dose of tincture in this plan is small, the maximum not over 0.05 cc.

Strickler, in 1918, advocated for prophylaxis daily hypodermic injections of an alcoholic extract of poison ivy leaves, from 0.3 to 0.5 cc., for from three to five days, and then the adminis-

tration of the same extract by mouth. He and many others reported good results.

Krause and Weidman (Ivy Poisoning, THE JOURNAL, June 27, 1925, p. 1996) reported a scientific test of this treatment. They found, by testing the sound skin, ten of twenty volunteers immune; but when they made the patch tests on irritated skin, only four proved immune. They found that repeated tests on the same area of skin developed no immunity, except to accelerate the appearance and disappearance of the eruption, which was just as severe on the fifth test as on the first.

After treatment for ten days by the Strickler method, retesting showed that no immunity had been developed, but rather an increased irritability of the skin and pruritus ani, which they ascribed to the action of the toxin, unchanged, being passed by the bowel.

Spain and Cooke (Studies in Specific Hypersensitiveness, *J. Immunol.* **13**:93 [Feb.] 1927) made a thorough study, producing a stable alcoholic extract and testing by patch tests with varying dilutions of it. Mouth treatment was used in a few cases but was often unsatisfactory because tedious and frequently forgotten. For the first hypodermic injection they used 0.1 cc. of the highest dilution that produced vesiculation in the patch test. They then increased the dose according to the sensitiveness of the patient. They gave the injections once a week for four or five weeks, then once in two weeks for three or four times, and then once a month for the rest of the season. Although 95 per cent of their patients reported benefit, the patch tests revealed no lessening of skin susceptibility.

Andrews (Diseases of the Skin, Philadelphia, J. B. Saunders Company, 1930, p. 314) reports coma lasting for twelve hours following "the customary drop doses of the tincture of rhus toxicodendron."

Templeton (Untoward Reactions Following Toxin Treatment for Dermatitis Venenata, *Arch. Dermat. & Syph.* **20**:83 [July] 1929) reports two types of reaction to the injection of the toxin: local urticaria about the site of injection and widespread urticaria in small wheals, at times becoming confluent to form large patches and sometimes mixed with vesicles like dermatitis venenata. Both these were accompanied by intense pruritus. In spite of the experimental work of Krause and Weidman and of Spain and Cooke, Templeton believes that the toxin method is better than the simple soothing method of treatment. He advocates the oral method of Schamberg for mild cases and for desensitization; but in severe cases he still uses the injections, beginning with 0.1 cc. and increasing 0.1 or 0.2 cc. each day.

A number of preparations for the injection treatment of rhus dermatitis are included in New and Nonofficial Remedies, but no preparation for the prevention of rhus poisoning has been accepted by the Council on Pharmacy and Chemistry.

THYROTOXICOSIS WITH POSITIVE WASSERMANN TEST

To the Editor:—A woman, aged 55, is suffering with mild thyrotoxicosis. She has what appears to be an adenomatous enlargement of the thyroid. The heart is normal but rapid. The blood pressure is 160 systolic, 85 diastolic. She has a three plus Wassermann reaction. Would neoarsphenamine be contraindicated? What antisyphilitic treatment would be advisable in view of the thyroid symptoms? No basal metabolism test has been made. Kindly omit name. M.D., New York.

ANSWER.—The interpretation of a three plus Wassermann test, especially in a metabolic disease such as thyrotoxicosis, may be difficult. In general, results less than a frankly positive or four plus Wassermann test should be discarded in the absence of supportive clinical evidence of syphilis. A careful history regarding the possibility of venereal infection, and a meticulous neurologic and cardiovascular examination, may disclose additional evidence suggesting that the patient may be syphilitic and supporting such a diagnosis. Under any circumstances the Wassermann test should be repeated, certainly in the same laboratory as well as in others, and the physician should know these laboratories, since technical errors in the performance of the test are not uncommon.

The diagnosis of toxic goiter should be established beyond any reasonable doubt. Properly executed tests of the basal metabolic rate, repeated on several occasions, would serve a valuable purpose not only in establishing a diagnosis of thyrotoxicosis but also in estimating the effect of management.

Obviously, in the instance cited, several possibilities must be considered. If the correspondent is convinced that the condition is hyperthyroidism, the chance of the patient's having concomitant syphilis is unlikely if the sole evidence of syphilis is the three plus Wassermann test. If, as an outside chance, she really has syphilis, the possibility of the thyrotoxic symptoms being entirely on a functional basis and not due to true thyrotoxicosis should be kept in mind. If, on repeated Wassermann tests in this and other laboratories the reaction is still found to be three plus, a therapeutic trial on antisyphilitic medication should be tried. There can be no harm in carrying out the usual antisyphilitic regimen in thyrotoxic patients, including the giving of neoarsphenamine if so desired, provided potassium iodide is at least temporarily withheld. Iodine preparations of all kinds would modify the effects of true hyperthyroidism and might in this way obscure the diagnosis.

If the conclusion is finally reached that the patient is thyrotoxic as well as syphilitic, a definite regimen of first treating her thoroughly for syphilis, including the administration of potassium iodide and, second, when the syphilis is finally under good control and the thyrotoxicosis is under iodine control, subjecting her to a subtotal thyroidectomy at the hands of a good surgeon experienced in thyroid work should be followed. The danger of such a procedure under the conditions mentioned and in the hands of an experienced surgeon should be slight and the probability of effecting a complete control should be very good.

FEVER IN PNEUMOTHORAX

To the Editor:—What is the cause of the rise of temperature in a pneumothorax spontaneous or induced? Please omit name. M.D., England.

ANSWER.—Rise of temperature in artificial, or induced, pneumothorax may result from several causes:

1. A compression toxemia, due to the rapid absorption of toxins incidental to the compression of abscessed cavities or other inflammatory matter within the lung.

2. Infection of the pleura, which may cause a rise in temperature within twenty-four to forty-eight hours after the institution of pneumothorax or any one of its refills, owing to such infection being introduced from the outside by way of a contaminated needle or through contamination of the needle, which may puncture the visceral pleura and pick up an infection in the lung tissue.

3. The development of fluid in the pleural cavity, constituting a hydropneumothorax. This occurs in about 50 per cent of the patients within one year of the institution of such therapy. In many instances there is a resorption of such fluid without deleterious results. In other instances it may tend to recur and may require removal by aspiration, especially if it reaches a level of approximately the third rib or fifth dorsal spine.

4. The lighting up of a tuberculous process in the other lung or the establishment of a new metastatic focus of tuberculous disease in the good lung.

In spontaneous pneumothorax there are principally two types:

1. The idiopathic type, usually the result of trauma to the chest wall, or the spontaneous rupture of a superficial bleb during exertion. Only rarely will there be a febrile reaction in this type and that usually is associated with infection and the development of pleural exudate.

2. The type associated with the rupture of a subpleural caseous tubercle into the pleural cavity. This is a most serious condition and but few patients who suffer it live longer than one month. The febrile rise here is due to a definite infection of the pleural cavity, usually resulting within twenty-four hours in a hydropneumothorax and followed immediately by a pyopneumothorax. In this type a compression toxemia may also be a factor in a febrile rise.

NIGHT SWEATS

To the Editor:—What are the causes of nontuberculous night sweats? The patient is a married woman, aged 39. The only significant feature in the history was lobectomy for nontoxic goiter in 1912 and 1926. The sweating always occurs at night and is confined to the upper limbs, head and neck, from the head to about the tenth dorsal vertebra. There is also an underdevelopment of the muscles of the right arm and right side of the face. The muscles of the right side have been weak for the past twenty-four years. This side goes into a myoclonus at night or when the patient is tired and is associated with a feeling of cold and fatigue. Please omit name. M.D., England.

ANSWER.—A nontuberculous infection, either localized or general, or thyrotoxicosis, may cause night sweats. In this instance a careful examination to exclude the possibility of harbored infection, and a basal metabolic rate determination under controlled conditions should be conducted. The fact that this patient has been subjected to lobectomy for nontoxic goiter on two previous occasions should arouse the suspicion that the thyroid may be responsible. It is often difficult to make a certain diagnosis of chronic, low grade hyperthyroidism. Tachycardia, a tendency to an unstable nervous status, a

moderate increase in the basal metabolic rate, and finally the beneficial response to a therapeutic trial on iodine would support a diagnosis of hyperthyroidism. The symptoms of thyrotoxicosis in nodular goiter may be bizarre, and individual symptoms, such as sweating, in a given case may be out of all proportion to all other manifestations. Sweating at night, such as described, is a frequent observation in thyrotoxicosis and may even be unilateral. Partial thyroidectomy in nodular goiter is frequently inadequate in controlling hyperthyroidism. A very small nodule that has been left intact may be sufficient to cause persistence of symptoms.

The neurologic manifestations mentioned are probably on an entirely different basis; however, myoclonus may be aggravated by a hyperthyroid state.

If, on study, a persistent low grade hyperthyroidism can be demonstrated to be present, the patient should probably be subjected to a third and more radical subtotal thyroidectomy at the hands of a surgeon experienced in thyroid work. Operative intervention, however, should be preceded by three or four weeks on iodine therapy.

HEMATURIA IN PREGNANCY

To the Editor:—I should like some advice about the following case: The urine of a woman four months pregnant is apparently entirely blood. Nothing else is distinguishable on urinalysis. She tells me that in the last three months of a previous pregnancy she experienced a similar condition. Her blood pressure has fallen from 120 to 110 systolic in the last two weeks. There is no apparent abdominal pain, although she is very weak and the hemoglobin is 70 per cent. If she stays on an exclusive milk diet the urine remains clear, but if she eats so much as a crust of bread the condition recurs. At present it will not return clear. Please omit name.

M.D., Pennsylvania.

ANSWER.—There is not sufficient information given on which to base a diagnosis. The appearance of large quantities of red blood cells in the urine during pregnancy is not a common occurrence. This is especially true when no other symptoms and urinary abnormalities are present. The causes are not essentially different from those which occur in the nonpregnant woman. Essential hematuria has been described but with the perfection of methods of urologic diagnosis the number of cases of hematuria without discoverable cause has diminished. Calculus and infections including tuberculosis, palpillomas, tumors of the bladder and kidney, and nephritis would all have to be considered. There are three conditions that could easily be aggravated by the pregnancy and might cause a hematuria with relatively few symptoms: a toxemia, varicosities, and hydro-ureter with hydronephrosis.

The bleeding and coagulation time should be tested to rule out a hemorrhagic diathesis and, of course, a complete blood examination should be made to make sure that none of the diseases of the blood are present.

A cystoscopic and roentgenologic examination would doubtless be required to clarify the diagnosis. The treatment naturally would vary with the diagnosis. If facilities are available for making these examinations, they should be done. Bland diet, with abundant fluids if there is no edema, keeping the lower bowel empty, good position of the uterus determined by examination, and exaggerated Sims and knee-chest positions might all be advantageous. Iron should doubtless be administered to combat the tendency to anemia.

TRANSFUSION OF CITRATED BLOOD

To the Editor:—I am having some difficulty with the indirect method of blood transfusion, using citrated blood in the procedure. I use 50 cc. of sodium citrate to 450 cc. of donor's blood. I keep this citrated blood as near body temperature as possible while in the graduated cylinder used for transfusion. When there is only about 15 cc. of the citrated blood left in the cylinder I add about 50 cc. of physiologic solution of sodium chloride. I have been getting a jelly-like coagulation following the addition of the saline solution. What I want to know is, Why do I get this coagulation? As the transfusion is a success, the last procedure of putting the saline solution into the left citrated blood which causes the coagulation is what is giving the trouble. Is the amount of saline solution to the amount of blood citrated overbalanced? I am using Lilly's ampules 50 cc., also Swan Myers and Sharp & Dohme Normal Salt Tablets number 2, four tablets dissolved in 1 liter of water.

ROBERT L. CARSON, St. Joseph, Mo.
Pharmacist, Missouri Methodist Hospital.

ANSWER.—Sharp and Dohme tablets number 2 contain sodium chloride, calcium chloride and potassium chloride. The additional calcium contained in these tablets disturbs the proper equilibrium between the sodium citrate and the normal blood calcium, which is responsible for the fact that the blood remains fluid. If physiologic solution of sodium chloride is used, which contains 0.9 per cent sodium chloride but no calcium, the phenomenon that is described will not occur.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

ALABAMA: Montgomery, July 11-14. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: The *general oral, clinical and pathological* examination will be held in Milwaukee, June 13. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OTOLARYNGOLOGY: Milwaukee, June 12. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

CALIFORNIA: *Reciprocity.* San Francisco, June 14. *Regular.* San Francisco, July 10-13. Los Angeles, July 24-27. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

COLORADO: Denver, July 5-8. Sec., Dr. Wm. Whitridge Williams, 422 State Office Bldg., Denver.

CONNECTICUT: *Basic Science.* Prerequisite to license examination. New Haven, June 10. Address State Board of Healing Arts, 1895 Yale Station, New Haven. *Regular.* Hartford, July 11-12. *Endorsement.* July 25. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden. *Homeopathic.* New Haven, July 11. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

DELAWARE: Wilmington, June 13-15. Sec., Dr. Harold L. Springer, 1013 Washington St., Wilmington.

DISTRICT OF COLUMBIA: *Basic Science.* Washington, June 29-30. *Regular.* Washington, July 10-11. Sec., Dr. W. C. Fowler, 203 District Bldg., Washington.

FLORIDA: Jacksonville, June 12-13. Sec., Dr. William M. Rowlett, Box 786, Tampa.

GEORGIA: Atlanta, June 14-16. Joint Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta.

ILLINOIS: Chicago, June 27-30. Supt. of Regis., Mr. Paul B. Johnson, State House, Springfield.

INDIANA: Indianapolis, June 20-22. Sec., Dr. William R. Davidson, 413 State House, Indianapolis.

IOWA: Iowa City, June 6-8. Dir., Mr. H. W. Grefe, Capitol Bldg., Des Moines.

KANSAS: Kansas City, June 20-21. Sec., Dr. C. H. Ewing, Larned.

KENTUCKY: Louisville, June 7. Sec., Dr. A. T. McCormack, 532 W. Main St., Louisville.

MAINE: Augusta, July 5-6. Sec., Dr. Adam P. Leighton, Jr., 192 State St., Portland.

MARYLAND: *Regular.* Baltimore, June 20-23. Sec., Dr. Henry M. Fitzhugh, 1211 Cathedral St., Baltimore. *Homeopathic.* Baltimore, June 20-21. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MICHIGAN: Ann Arbor, June 6-8. Detroit, June 13-15. Sec., Dr. J. E. McIntyre, Hollister Bldg., Lansing.

MINNESOTA: *Basic Science.* Minneapolis, June 6-7. Sec., Dr. J. C. McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. *Regular.* Minneapolis, June 20-22. Sec., Dr. E. J. Engberg, 350 St. Peter St., St. Paul.

MISSOURI: St. Louis, June 7-9. Address State Board of Health, Capitol Bldg., Jefferson City.

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II.* The examinations will be held at centers where there are five or more candidates, June 26-28 and Sept. 13-15. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

NEBRASKA: Omaha, June 7-9. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEW JERSEY: Trenton, June 20-21. Sec., Dr. James J. McGuire, 1101 Trenton Trust Bldg., Trenton.

NEW YORK: Albany, Buffalo, New York and Syracuse, June 26-29. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, Room 315 Education Bldg., Albany.

NORTH CAROLINA: Raleigh, June 19. Sec., Dr. B. J. Lawrence, 503 Professional Bldg., Raleigh.

NORTH DAKOTA: Grand Forks, July 5-8. Sec., Dr. G. M. Williamson, 4½ S. 3rd St., Grand Forks.

OHIO: Columbus, June 6-9. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OREGON: Portland, July 4-6. Sec., Dr. Joseph F. Wood, 509 Selling Bldg., Portland.

PENNSYLVANIA: Philadelphia and Pittsburgh, July 11-15. Sec., Mr. Charles D. Koch, 400 Education Bldg., Harrisburg.

RHODE ISLAND: Providence, July 6-7. Dir., Dr. Lester A. Round, 319 State Office Bldg., Providence.

SOUTH CAROLINA: Columbia, June 27. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

SOUTH DAKOTA: Watertown, July 18. Dir., Dr. P. B. Jenkins, Waubay.

TEXAS: Galveston, June 20-22. Sec., Dr. T. J. Crowe, 918-19-20 Mercantile Bldg., Dallas.

UTAH: Salt Lake City, June 28-29. Dir., Mr. S. W. Golding, 326 State Capitol Bldg., Salt Lake City.

VERMONT: Burlington, June 21-23. Sec., Dr. W. Scott Nay, Underhill.

VIRGINIA: Richmond, June 21-23. Sec., Dr. J. W. Preston, 803 Medical Arts Bldg., Roanoke.

WASHINGTON: *Basic Science.* Seattle, July 13-14. *Regular.* Seattle, July 17-18. Dir., Mr. Harry C. Huse, Department of Licenses, Olympia.

WISCONSIN: *Basic Science.* Milwaukee, June 17. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee. *Regular.* Milwaukee, June 27-29. Sec., Dr. Robert E. Flynn, 401 Main St., La Crosse.

WYOMING: Cheyenne, June 5. Sec., Dr. W. H. Hassed, Capitol Bldg., Cheyenne.

Illinois January Examination

Mr. Paul B. Johnson, superintendent of registration, Department of Registration and Education, reports the written and practical examination held in Chicago, Jan. 17-19, 1933. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Forty-four candidates were examined, 42 of whom passed and 2 failed. The following colleges were represented:

PASSED		
College	Year Grad.	Per Cent
Chicago Medical School	(1932)	77*
Loyola University School of Medicine	(1932) 79, 81,* 81,*	84
Northwestern University Medical School	(1931) (1932) 81,* 81, 83,* 84,* 84,* (1933) 79*	85,*
Rush Medical College, University of Chicago	(1930) (1932) 79,* 82, 83, 84, 84, 85, 86	84,
School of Medicine of the Division of Biological Sciences, University of Chicago	(1932) 79, 79, 81,* 81, 82,*	83
University of Illinois College of Medicine	(1931) (1932) 76,* 76,* 77, 79,* 80,* 81, 82, 83, (1933) 76	78,*
Washington University School of Medicine	(1930)	83
University of Nebraska College of Medicine	(1931)	83*
Long Island College of Medicine	(1930)	82*
University of Toronto Faculty of Medicine	(1931)	79
Medizinische Fakultät der Friedrich-Wilhelms Universität, Berlin	(1913)	75
Magyar Királyi Pázmány Petrus Tudományegyetem Orvosi Fakultasa, Budapest	(1913)	76

FAILED		
College	Year Grad.	Per Cent
Chicago Medical School	(1932)	70
McGill University Faculty of Medicine	(1926)	63

*License withheld pending payment of fee.

Nevada Reciprocity Report

Dr. Edward E. Hamer, secretary, Nevada State Board of Medical Examiners, reports two physicians licensed by reciprocity with other states, Feb. 6, 1933. The following colleges were represented:

LICENSED BY RECIPROCITY		
College	Year Grad.	Reciprocity with
California Medical College	(1885)	California
University of Oregon Medical School	(1918)	Oregon

Book Notices

Annual Reprint of the Reports of the Council on Pharmacy and Chemistry of the American Medical Association for 1932. With the Comments That Have Appeared in The Journal. Cloth. Price, $1. Pp. 104. Chicago: American Medical Association, 1932.

The successive volumes of these collected reports are designed to give permanent form to the Council's consideration not only of those products which have been rejected by the Council but also of those which show promise but which are not yet ready for general use by the medical profession, as well as those which stand accepted but in regard to the status of which there has arisen a question that needs clarification. The second and third categories are called, respectively, "preliminary" and "special" reports, and these are often the most interesting features of the book. Certainly this is true in the case of the newly issued volume of 1932 reports.

The preliminary report on Thorotrast, a colloidal thorium dioxide preparation proposed for use in retrograde pyelography and for roentgen visualization of the liver and spleen by intravenous administration, is an excellent example of this class of reports. The articles on Nirvanol and Triethanolamine are also interesting and timely preliminary reports. Among the "special" reports are those on sulpharsphenamine and mercurochrome, which are of particular timeliness and effectiveness. Each report clarifies the present status of the drug concerned —the former on the basis of a questionnaire circulated among leading syphilologists, and the latter on the basis of independent bacteriologic investigation, done by consultants of the Council. Among the reports on products definitely rejected for inclusion in New and Nonofficial Remedies, those of particular interest to physicians are: Amertan, an unoriginal mixture of tannic acid and merthiolate in a water soluble jelly, marketed under a proprietary, uninforming name; Antiopin, a mixture of indefinite composition offered under a nondescriptive, therapeutically suggestive name and marketed in a way that may foster the drug habit; Eubetin, another insulin substitute for oral administration marketed under a proprietary uninforming name with unwarranted claims; Ferro-Copral, a mixture of saccharinated ferric oxide, manganese citrate and copper proteinate proposed for use in the treatment of pernicious anemia and marketed under a proprietary name with unwarranted therapeutic claims; Hepatex P. A. F., a liver preparation proposed for intravenous use and marketed under a proprietary and insufficiently descriptive name with no satisfactory evidence of the safety of its recommended intravenous use; Bi-So-Dol, an unscientific "alkalinizing" mixture offered under an uninforming proprietary name with exaggerated and unwarranted claims of therapeutic usefulness; Gan-Aiden, consisting mainly of the well known ethyl aminobenzoate (benzocaine), a preparation of undeclared composition marketed under a noninforming, proprietary name; Myodin, Subidin and Sanguiodin, unscientific preparations of iodine marketed with unwarranted claims and indefinite, incorrect statements of composition, under proprietary uninforming names, and Tonikum-Roche (now Elixir Arsylen Compositum-Roche), a "shotgun" proprietary "tonic" marketed with misleading therapeutic claims.

This volume should be on the shelves of all progressive physicians, pharmacologists and students. It is a convenient and compendious guide to the latest critical thought in pharmacology and therapeutics.

Kurzes Handbuch der Ophthalmologie. Herausgegeben von F. Schieck und A. Brückner. Band II: Physiologie, Optik Untersuchungsmethoden, Bakteriologie. Bearbeitet von A. Brückner, W. Comberg und anderen. Paper. Price, 125 francs. Pp. 1079, with 630 illustrations. Berlin: Julius Springer, 1932.

Within the appointed time has appeared the final volume of the so-called Short Handbook of Ophthalmology, concluding a monumental work that is undoubtedly the most valuable reference series in ophthalmology that has ever appeared. This statement is made advisedly, for although the Kurzes Handbuch has not the voluminosity, the elaborate bibliography or the discussion of case reports that characterize the Graefe-Saemisch Handbuch der gesamten Augenheilkunde, it has the advantage of being brought down to the present and has been completed within a reasonable time. The cost is high, averaging about 140 marks per volume, but the value is there. This volume, labeled the second, contains the following divisions: Physiology of the Nutrition and Circulation of the Eye, by Otto Weiss of Königsberg; Morphologic Changes in the Retina Under the Influence of Light, by Karl vom Hofe of Cologne; The Visual Purple and Chemical Changes in the Retina, by Rudolf Dittler of Marburg; Electrical Processes of the Visual Organ, by Arnt Kohlrausch of Tübingen; The Light Sense, by Max Comberg of Berlin; The Color Sense, by Rudolf Helmbold of Danzig; The Physiology of Optical Perceptions, by Rudolf Dittler of Marburg; Refraction and Accommodation, by Heinrich Erggelet of Jena; The Theory of Spectacles, by Heinrich Erggelet of Jena; The Clinical Methods of Examination, by Arth Brückner of Basel, and The Bacteriology of the Eye, by Max zur Nedden of Düsseldorf. This volume maintains a standard set by its predecessors, in thoroughness of material presented, in completeness of bibliography, and in general physical make-up. The seven volumes form a reference work indispensable to every library and scientific ophthalmologist.

American and Canadian Hospitals: A Reference Book Giving Historical, Statistical and Other Information on the Hospitals and Allied Institutions of the United States and Possessions, and the Dominion of Canada. Edited by James Clark Fifield, with the Cooperation of the American Hospital Association. Cloth. Price, $10. Pp. 1560. Minneapolis: Midwest Publishers Company, 1933.

This is a reference work giving historical, statistical and other information of the hospitals of the United States and Canada. In the development of the work the publisher has had the cooperation of numerous officers of the American Hospital Association, as well as other persons interested in hospital service. The book opens with a brief history of the American Hospital Association, followed by a statement concerning the Council on Medical Education and Hospitals of the American Medical Association, the Department of Hospital Service of the Canadian Medical Association, Canadian Hospital Council, the American College of Surgeons, the Catholic and Protestant Hospital Associations, the American and Canadian Nurses' Associations, the League for Nursing Education and the Association of Hospital Workers. There are also statements about the American Sanatorium Association and

the Association of Record Librarians of North America and the American Occupational Therapy Association. There follow then in geographic order, by states and cities, records of all of the hospitals and sanatoriums in the United States, giving first of all the histories of the institutions, their character, their rates, their staff, their equipment, the trustees, the bed costs, average attendance, training schools for nurses and, indeed, practically all the important information that any one might desire. Nothing is said as to the manner in which the information was collected but it is presumed that it was done by the questionnaire method. The book concludes with a series of appendixes providing the history of numerous organizations related to the hospital field from every possible point of view. There are, for example, a life of Dorothea Dix and one of Florence Nightingale, as well as statements concerning the history of the Commonwealth Fund, the Rosenwald Fund, the Duke Endowment and similar organizations. The book is an exceedingly useful work of reference for any one in the medical field.

Fièvre boutonneuse: Fièvre exanthématique du littoral méditerranéen. Par D. Olmer, professeur de clinique médicale à la Faculté de médecine de Marseille, et Jean Olmer, chef de clinique médicale à la Faculté de médecine de Marseille. Collection médecine et chirurgie pratiques, no. 57. Paper. Price, 17 francs. Pp. 104, with 10 illustrations. Paris: Masson & Cie, 1933.

The authors bring together in this treatise the facts at present known about a type of spotted fever of the Mediterranean littoral, a disease first designated as "fièvre boutonneuse" by Conor and Bruch in 1910 in Tunis and to which this name was later restricted by the first International Congress of Hygiene, at Marseilles. The disease is clinically and immunologically distinct from true typhus fevers (epidemic and endemic types), is transmitted by dog ticks (Rhipicephalus sanguineus), and is quite uniformly benign in character. It is a disease of summer, occurring in foci in the country from one year to another. The history of the disease is reviewed, its etiology and epidemiology are discussed, and a description of the clinical studies is given. There are also chapters on the laboratory observations, nosology, prophylaxis and treatment, and an extensive bibliography. It is an important contribution to knowledge of the typhus fevers.

Indigenous Drugs of India: Their Medical and Economic Aspects. By R. N. Chopra, M.A., M.D., Lieut.-Colonel, Indian Medical Service. Cloth. Price, Rs. 15/-. Pp. 655. Calcutta: Art Press, 1933.

With anticipation of possible surprises one opens this book, having so romantic a title and bearing on its front page Longfellow's

> "Come, Wander with me," she said,
> "Into regions yet untrod,
> And read what is yet unread
> In the manuscripts of God."

One is not disappointed. It is the first book of this kind to be permeated by the critical spirit of modern pharmacology. The author fully understands the herculean nature of the task of attempting to clean out the Augean stable of the ancient Hindu medical lore. He points out that India was really the cradle of the world's medical knowledge, which was laid down most especially in its Ayurveda (2500-600 B. C.), and that there are unmistakable evidences of the influence of the Hindu materia medica on the Greek and Roman and through these on Arabic materia medica. With the conquest of India by the Moslems, the Arabic system was introduced and the Ayurvedic methods were discarded. In other words, this knowledge of Hindu origin, no doubt changed, was reimported into India by its conquerors; and the same thing happened again with the establishment of the British rule. It is freely admitted that, in this process, the ancient knowledge has been so much refined and improved that it bears no resemblance to its original source. The author proposes to apply modern methods of extraction and assay, of pharmacodynamic and clinical study to the Ayurvedic materia medica, at present discarded by the Western system of medicine though still largely used by the people of India. The research work on indigenous drugs, initiated by the author at the Calcutta School of Tropical Medicine, has three main objects in view: to make India self supporting in the production of medicines, to discover remedies that might be employed by the exponents of "Western medicine," and to develop means of medicinal economy, to render the necessary remedies available to the great masses of India whose economic condition is low. There is no doubt that India, which "could supply the whole of the civilized world with medicinal herbs," is at present shamefully exploited by manufacturers of ethical as well as of other proprietary medicines, who, in many instances, get from India the raw material at a pittance and reintroduce the finished product at an enormous increase in price. Readers in this country will, of course, be chiefly interested in the second of the avowed aims, and from this standpoint the book merits the attention of progressive pharmacologists and of enterprising manufacturers all over the world.

Neuropathology: The Anatomical Foundation of Nervous Diseases. By Walter Freeman, M.D., Ph.D., D.N.B., Professor of Neurology, George Washington University. Cloth. Price, $4. Pp. 349, with 116 illustrations. Philadelphia & London: W. B. Saunders Company, 1933.

At last a textbook of neuropathology has appeared that can be unhesitatingly recommended for the medical student. It is concise and written in a simple readable style within the capacity of the medical student to understand. The author has evidently attempted to select the essentials and present them clearly and attractively. The illustrations have been chosen for the same purpose and actually illustrate the text without being so numerous as to confuse the student. One might wish that drawings had been used, but the photographic reproductions are for the most part fairly clear. The common lesions are given the greatest space. The discussion of tumors is in line with the latest pathologic studies. The glossary is useful. The book should be popular with those who must teach neuropathology to medical students.

A Standard Classified Nomenclature of Disease. Compiled by the National Conference on Nomenclature of Disease. Edited by H. B. Logie, M.D., C.M., Executive Secretary. Fabrikoid. Price, $3.50. Pp. 702. New York: Commonwealth Fund, 1933.

This volume is the outcome of an effort carried on now for several years in an attempt to develop a uniform nomenclature for use by hospitals, health organizations and insurance companies. This nomenclature is supposed to include every disease that can be recognized clinically, to avoid repetition and overlapping and to classify the diseases in a logical manner. It is supplemented by an alphabetical index to aid reference. The numbers of the international lists of causes of death are printed in italics after the titles of the diseases to aid comparison of the morbidity and mortality information. Code numbers are supplied to enable the use of punch card systems for tabulation. English terms are employed in preference to Latin and Greek except as concerns diseases of the skin and eye, in which custom has entrenched Greek and Latin names. Diphthongs are avoided in English terms. Because of the difficulty of classifying certain conditions, such as lumbago, headache, rheumatism, jaundice and asthma, a special supplementary list of such terms is provided in an appendix, which thus forms a useful guide to fields for investigation.

The compilers of this book have been familiar with nomenclatures previously prepared by other groups. The volume they have prepared is probably as good as could be developed by any type of organization. It should be given careful trial so that its merits and demerits may be well established before the publication of another edition.

Herzneurosen und moderne Kreislauftherapie. IX. Fortbildungs-Lehrgang in Bad Nauheim 16.—18. September, 1932. Herausgegeben von der Vereinigung der Bad-Nauheimer Ärzte. Boards. Price, 10 marks. Pp. 159, with 20 illustrations. Dresden & Leipzig: Theodor Steinkopff, 1932.

The fifteen chapters represent lectures delivered during the course of instruction at Bad Nauheim in September 1932. Some of these chapters have already appeared as articles in medical journals. The subjects are handled by men from various cities in Germany. That the chapters vary widely as to excellence of content as well as manner of presentation goes without saying. One may be sure, also, that the virtues of Bad Nauheim as a suitable place to which to refer patients for the treatment of cardiac disorders are not overlooked. Three of the authors register from this resort. Five chapters deal with cardiac neuroses; six are devoted to the modern treatment of circulatory disorders. Four deal with various topics related, though less intimately, to the main subjects considered during the course.

Medicolegal

When Employee May Reject Employer's Physician

(Wingate v. Evans Model Laundry (Neb.), 244 N. W. 635)

The claimant, in the course of her employment, undertook to lift a bag weighing 102 pounds. She twisted and strained herself, felt a sudden pain in her abdomen and back, and became faint. After a short period of rest, she resumed work, although apparently still partly disabled. Her employer sent her to a specialist in diseases of women, who diagnosed her case as a "prolapsed uterus, second degree, traumatic in origin." He insisted on an operation, although the employer's regular physician, a specialist in surgery, advised against it, since he could find no evidence of prolapse. The operation was performed, but it gave no relief, nor did other treatment administered by physicians in the service of the employer. The injured employee thereupon consulted specialists of her own selection. They found, among other evidences of injury, a fracture of the transverse process of the fifth lumbar vertebra on the left side. The operation wound in the employee's abdomen had closed with a keloid formation—a raised, thickened, hard scar, tender to the touch and on movement. The patient still suffered great pain on moving and there was tenderness over the injured vertebra.

In the first instance, the employee was paid compensation for nine weeks. After a hearing, however, the compensation commissioner dismissed her claim for further compensation. She appealed to the district court, which awarded her compensation for the services of her own physician, who had assisted at the operation, and compensation for temporary total disability. The court directed her employer and his insurer to furnish proper medical treatment by physicians selected or approved by her. The employer and his insurance carrier appealed to the Supreme Court of Nebraska.

Where the services furnished by an employer are inadequate or inefficient, it has been held that an employee is justified in changing to his own physician and is entitled to the reasonable costs of such service. *Kelley* v. *Pacific Electric R. Co.*, 1 Calif. I. A. C. Dec. 150. In the present case, said the court, the employee, being still totally disabled, having received no benefit from the treatment given her by any of the doctors furnished by her employer, and becoming desperate of ever being benefited by them, was warranted in selecting other experts to take additional roentgenograms and to make a new diagnosis.

The employer and his insurance carrier contended that the district court erred in holding that the employee was entitled to further medical treatment by physicians to be selected or approved by her. The Supreme Court pointed out, however, that an injured workman, while in a hospital or under the care of a surgeon, is still in the course of his employment and so continues as long as his disability remains. *Ross* v. *Erickson Construction Co.*, 89 Wash. 634, 155 P. 153, L. R. A. 1916F, 319. Moreover, when an employer or an insurance carrier employs a physician for his injured employee, and that physician makes a wrong diagnosis, the disability resulting from that erroneous diagnosis is compensable. *Johnson* v. *Pacific Surety Co.*, 1 Calif. I. A. C. Dec. 560. A patient subjected to a painful and unnecessary operation, by reason of which her disability is increased and tenderness, pain and weakness continue, is to be allowed compensation.

The Supreme Court, however, for other reasons, reversed the decision of the district court in favor of the employee, and remanded the case.

Workmen's Compensation Acts: Freezing of Foot Afflicted with Buerger's Disease.—The trial court found that the freezing of Wright's toes and foot resulted from the combined effects of Buerger's disease and of the wet, muddy, slushy and cold condition to which the foot was exposed and that this was an accident arising out of and in the course of his employment, and entered judgment in his favor. His employer appealed to the Supreme Court of Kansas. This court recognizes, said the Supreme Court, that peculiar circumstances make an event an accident when under ordinary circumstances it might not have been so; that an injury may be an accident in the case of a person suffering from a disease, although it would not have been sustained by a perfectly healthy individual, and that if an existing disease is aggravated by accident, the resulting injury is compensable. The court could find, however, no element of an accident conspicuous in this case. The climatic condition was normal for the season when the injury occurred, and it was normal for the top of the ground to freeze and thaw. There was no storm, flood or other sudden or unusual event. It would not have been an accident under the circumstances for a foot or a hand not sufficiently protected to freeze. While there are cases in other jurisdictions that hold freezing to be an accident, in most of them the freezing seems to have occurred under very unusual and peculiar circumstances. Such cases, however, failed to convince the Kansas court that the freezing of a diseased foot under the circumstances of this case constituted an accident within the meaning of the law. The award of the trial court in favor of the workman was therefore reversed.—*Wright v. Keith (Kan.), 15 P. (2d) 429.*

Value of Physician's Services Provable by Lay Evidence.—A layman may be competent to testify as to the reasonable value of services of a physician, but this rule is based on the fact that the witness' qualifications to do so must appear in the record. *Millard* v. *Northwestern Mfg. Co.*, 200 Iowa, 1063, 205 N. W. 979.—*Wood v. Branning (Iowa), 244 N. W. 658.*

Society Proceedings

COMING MEETINGS

American Medical Association, Milwaukee, June 12-16. Dr. Olin West, 535 North Dearborn Street, Chicago, Secretary.

American Academy of Pediatrics, Chicago, June 12-13. Dr. Clifford G. Grulee, 636 Church Street, Evanston, Ill., Secretary.

American Association for the Study of the Feeble-Minded, Boston, May 31-June 3. Dr. Groves B. Smith, Beverly Farms, Godfrey, Ill., Secretary.

American Association of Medical Milk Commissions, Milwaukee, June 12-13. Dr. Harris Moak, 360 Park Place, Brooklyn, Secretary.

American Dermatological Association, Chicago, June 8-10. Dr. W. H. Guy, 500 Penn Avenue, Pittsburgh, Secretary.

American Federation of Organizations for the Hard of Hearing, Chicago, June 18-22. Miss Betty C. Wright, 1601 35th Street, N.W., Washington, D. C., Secretary.

American Heart Association, Milwaukee, June 13. Dr. Irl C. Riggin, 450 Seventh Avenue, New York, Executive Secretary.

American Laryngological, Rhinological and Otological Society, Chicago, June 8-10. Dr. Robert L. Loughran, 33 East 63d Street, New York, Secretary.

American Proctologic Society, Chicago, June 12-13. Dr. Frank G. Runyeon, 1361 Perkiomen Avenue, Reading, Pa., Secretary.

American Psychiatric Association, Boston, May 29-June 2. Dr. Clarence O. Cheney, 722 West 168th Street, New York, Secretary.

American Society of Clinical Pathologists, Milwaukee, June 9-12. Dr. A. S. Giordano, 531 North Main Street, South Bend, Ind., Secretary.

American Therapeutic Society, Milwaukee, June 9-10. Dr. Oscar B. Hunter, 1801 Eye Street, N.W., Washington, D. C., Secretary.

American Urological Association, Chicago, June 20-22. Dr. Gilbert J. Thomas, 1009 Nicollet Avenue, Minneapolis, Secretary.

Association for Research in Ophthalmology, Milwaukee, June 13. Dr. Conrad Berens, 35 East 70th Street, New York, Secretary.

Association for the Study of Allergy, Milwaukee, June 12-13. Dr. Warren T. Vaughan, 808 Professional Building, Richmond, Va., Secretary.

Association for the Study of Internal Secretions, Milwaukee, June 12-13. Dr. F. M. Pottenger, 1930 Wilshire Boulevard, Los Angeles, Secretary.

Conference of State and Provincial Health Authorities, Washington, D. C., June 5-6. Dr. A. J. Chesley, State Department of Health, St. Paul, Minn.

Maine Medical Association, Poland Spring, June 26-28. Dr. Philip W. Davis, 22 Arsenal Street, Portland, Secretary.

Massachusetts Medical Society, Boston, June 5-7. Dr. Walter L. Burrage, 182 Walnut Street, Brookline, Secretary.

Medical Library Association, Chicago, June 19-21. Miss Marjorie J. Darrach, 645 Mullett Street, Detroit, Secretary.

Medical Women's National Association, Milwaukee, June 11-12. Dr. Inez A. Bentley, 45 Gramercy Park, New York, Secretary.

Montana, Medical Association of, Anaconda, July 12-13. Dr. E. G. Balsam, Box 88, Billings, Secretary.

National Tuberculosis Association, Toronto, Canada, June 26-30. Dr. Charles J. Hatfield, Seventh and Lombard Streets, Philadelphia, Secretary.

New Jersey, Medical Society of, Atlantic City, June 6-9. Dr. J. B. Morrison, 66 Milford Avenue, Newark, Secretary.

North Dakota State Medical Association, Valley City, May 31-June 2. Dr. Albert W. Skelsey, 20½ Broadway, Fargo, Secretary.

Pacific Coast Oto-Ophthalmological Society, San Francisco, June 28-30. Dr. F. C. Cordes, Fitzhugh Building, San Francisco, Secretary.

Rhode Island Medical Society, Providence, June 3. Dr. J. W. Leech, 167 Angell Street, Providence, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Cancer, New York

17: 293-587 (Feb.) 1933

Suggested Methods for Standardization of Carcinogenic Activity of Different Agents for the Skin of Mice. C. C. Twort and J. M. Twort, Manchester, Lancashire, England.—p. 293.

*Carcinoma of Colon: Its Roentgenologic Manifestations and Differential Diagnosis. H. M. Weber, Rochester, Minn.—p. 321.

Encephalography in Surgical Lesions of Brain: Report of Fifty Consecutive Cases. W. J. Gardner and B. H. Nichols, Cleveland.—p. 342.

Roentgenographic Findings Associated with Tumors of Spinal Column, Spinal Cord and Associated Tissues. J. D. Camp and A. W. Adson, Rochester, Minn., and J. J. Shugrue, Washington, D. C.—p. 348.

Roentgenology of the Pharynx and Upper Esophagus. H. K. Pancoast, Philadelphia.—p. 373.

*Sympathetic Tumors of Adrenal Medulla: Report of Four Cases. E. Scott and Marguerite G. Oliver, Columbus, Ohio, and Mary H. Oliver.—p. 396.

Postmortem Observations of One Hundred and Eighteen Carcinomas of Large Bowel. W. G. Harding 2d and F. D. Hankins, Los Angeles. —p. 434.

Cultural Characteristics of Cysticercus Cysts and Two Cysticercus Tumors. W. Mendelsohn, Baltimore.—p. 442.

Carcinoma of Colon.—Weber points out that success in the treatment of patients afflicted with carcinoma of the colon will be advanced with the development of refinements in diagnostic methods. It is possible that a great many of the failures in treatment are attributable to the late stage at which the lesion was first recognized. Roentgenologic methods make it possible to recognize carcinoma in its early stages, often before there is adequate clinical evidence for suspecting its presence. The disease must be identified early in its course to permit the earliest possible institution of the therapeutic procedures indicated. Any changes in intestinal habit, evidenced by irritability, mucous diarrhea, alternating periods of constipation, localized pain and tenderness which do not tend rapidly to disappear, not to mention tumefaction, anemia and obstruction, are indications for a most thorough roentgenologic investigation of the intestinal tract. It is not out of place to recommend that this investigation be included in the routine yearly examinations. Such measures are necessary to increase the operability of the malignant lesions encountered, and simultaneously will offer much more reasonable hope for satisfactory end-results.

Sympathetic Tumors of Suprarenal Medulla.—Scott and his associates present 158 cases of tumors with their origin in one or both suprarenal medullas, collected from the literature and classified on the basis of their structural differentiation. They also report four cases of sympathicoblastomas from their laboratories. The Pepper type of tumor of the suprarenal medulla (1) may originate in the right, the left, or both suprarenals; (2) frequently is congenital; (3) occurs in the cases reviewed at an average age of 1.5 months when primary in both suprarenals, 2.25 months when primary in the right, 15.5 months when in the left; (4) was found in thirty cases from the literature and in one of the authors' cases, and (5) is found only in the completely undifferentiated class of tumors. The Hutchison type of suprarenal tumor (1) was found in thirty-eight cases from the literature; (2) may originate in either suprarenal but was not found when the tumor was primary in both, and (3) occurs at an average age of 8.5 years when primary in the left, at 3.5 years when primary in the right suprarenal. Both Pepper and Hutchison tumors when originating in the right suprarenal occur at earlier ages than do those in the left suprarenal. The younger the patient, the more undifferentiated the tumor elements. The more undifferentiated the tumor, the greater the number of metastases and the greater the degree of malignant changes. Tumors with atypical metastases occur, as a rule, at older age levels and are more mature in structure. Sex does not appear to be a factor in the incidence of these tumors. The conclusions of Frew as to the relationship of the type of metastasis to the seat of the primary tumor do not seem to be borne out by a study of a larger number of cases. Any attempt at an explanation of the underlying factors determining the type of metastasis is at present theoretical. Whether sympathicoblastomas, especially of the Pepper type, are truly metastatic, or whether the foci are heterotopic in origin, has been discussed in the literature. According to Wiesel, rests of sympathetic building cells may occur in early fetal life on the under surface of the liver. It is conceivable that, as the liver grows, these cells may be carried into the hepatic tissue with the anastomosis of the vitelline veins and be widely distributed with the blood vessels. Matzdorff, also, thinks that the liver tumors are not true metastases but are primary from fetal rests. The distinctly earlier age at which the Pepper type appears might argue for the theory of a systemic origin of this type. However, in the records of all types of malignant sympathetic suprarenal tumors and in one of the authors' cases, a probable congenital Pepper type, tumor cells were found filling the lymph nodes and blood vessels of both the primary and the secondary growths. This fact is evidence for a genuine metastasis as one means at least of the distribution of the tumor masses.

American Journal of Diseases of Children, Chicago

45: 229-460 (Feb.) 1933

*Septicemia in the New-Born. Ethel C. Dunham, New Haven, Conn. —p. 229.

Experiments on Antibacterial Properties of Pyridium and Serenium. J. B. Gillespie, Rochester, Minn.—p. 254.

*Excretion of Xylose as Measure of Renal Function in Children. Ella H. Fishberg and L. Friedfeld, New York.—p. 271.

Diphtheria and Diphtheria Carriers in Hospitals for Care of Children: Incidence, Control and Determination of Virulence; Significance of Routine Admission Cultures. S. C. Peacock and Marie Werner, Chicago.—p. 279.

Acid-Base Balance of New-Born Infants: III. Influence of Cow's Milk on Acid-Base Balance of Blood of New-Born Infants. Eleanor Marples and V. W. Lippard, New York.—p. 294.

*Resolving Exudates in Pulmonary Tuberculosis of Childhood: Study I. H. S. Reichle, Cleveland.—p. 307.

Tetany in Very Young Infants, with Especial Reference to Etiology. P. Cohen, New York.—p. 331.

Septicemia in the New-Born.—Dunham reports thirty-nine cases of septicemia in new-born infants occurring during a period of five years at the New Haven Hospital. The final diagnosis, based on the growth of organisms from the blood, was usually corroborated by clinical, and, in many cases, by postmortem examination. The commonest organisms found were the streptococcus, the staphylococcus and Bacillus coli. Clinically, septicemia due to the streptococcus seemed to differ from other types of septicemia by the absence of jaundice and bleeding, by the less frequent enlargement of the spleen and by the more frequent appearance of cutaneous infections, omphalitis, peritonitis and meningitis. Streptococcus septicemia invariably had a fatal outcome. In the cases of septicemia caused by the staphylococcus or by B. coli, on the other hand, jaundice was a common symptom, occurring in more than half of the cases in the two groups. Bleeding took place in about half of the cases in the staphylococcus group and in about a third of the cases in the B. coli group. The spleen was frequently enlarged (in half or more of the cases) in the two groups. Anemia, however, was less common in staphylococcus septicemia than in that caused by the streptococcus and B. coli. Infection of the urinary tract was found only in cases of B. coli septicemia. Staphylococcus or B. coli septicemia was not invariably fatal.

Excretion of Xylose.—Fishberg and Friedfeld describe a renal function test based on the oral administration of xylose. The normal kidney concentrates more than 2.5 per cent of the xylose in the urine after the ingestion of 1 Gm. of xylose for every 3 pounds of body weight, and the xylose is practically removed from the blood stream within five hours. The functionally deficient kidney concentrates less xylose and retains it for a much longer period in the blood. The kidney function may thus be estimated in the blood of infants when the collection of urine is difficult. Their technic is as follows: After limitation of the intake of fluids from the preceding evening,

specimens of blood and urine are taken in the morning. For every 3 pounds of body weight 1 Gm. of xylose, up to a maximum of 50 Gm., is given in lemonade. Specimens of blood are collected at one and a half, three and five hours. Specimens of urine are taken at one, two, five, eight and twelve hours, and then another twelve hour specimen of the urine is taken. Quantitative reduction tests are made on the specimens of urine. Yeast is shaken with ten times the volume of water and centrifugated. The supernatant fluid is poured off, and this process is repeated until the supernatant liquid no longer shows any reducing power with a Benedict solution. A 10 per cent solution of this yeast is then made. Oxalated blood, 1 cc., is dropped into 7 cc. of this solution and allowed to stand for two minutes. Two cubic centimeters of tungstic acid is then added and the Folin-Wu determination of reducing substance done.

Resolving Exudates in Pulmonary Tuberculosis.—On the basis of a critical review of the literature and in the light of personal clinical and pathologic experience, Reichle has reached the conclusion that resolving lesions are of three types: (1) simple atelectases, (2) nontuberculous lobar or bronchopneumonias and (3) retrogressive tuberculous pneumonias. The exact relative incidence of the three lesions is not known, but it is probable that the retrogressive tuberculous pneumonias predominate. This is without doubt true for the lesions of long duration that lead to resolution. Since resolution is possible in almost every form of tuberculous inflammation, there is no reason for calling on any unusual mechanism to explain the retrogressive tuberculous exudates. Clinically, the only reliable criterion for the diagnosis of the retrogressive type of tuberculous pneumonias is the course of the disease. This involves the ultimate complete or almost complete resolution of the process. The necropsies heretofore reported have dealt with the stage prior to possible resolution, or after resolution was complete, and therefore have contributed little to the solution of this problem. A decisive contribution would be made by repeated biopsy examinations, as in the case of Rubinstein.

American Journal of Ophthalmology, St. Louis

16: 97-191 (Feb.) 1933

Origin of Intra-Ocular Pressure. R. Sondermann, Berlin, Germany.—p. 97.
Pantocain as Local Anesthetic in Ophthalmology. W. H. Wilmer and R. T. Paton, Baltimore.—p. 106.
Changes of Optic Nerve Resulting from Pressure of Arteriosclerotic Internal Carotid Arteries. O. Saphir, Chicago.—p. 110.
Premonitory Lid Edema in Typhoid Group. S. J. Beach, Portland, Maine.—p. 119.
Management of Dense Secondary Cataract. T. C. Lyster, Los Angeles.—p. 122.
Cilia in Anterior Chamber. H. F. Graff, Baltimore.—p. 126.
Osteitis Deformans with Optic Nerve Atrophy: Case Report. H. S. Kuhn, Hammond, Ind.—p. 128.
Diagnosis of Trachoma. H. J. Howard, St. Louis.—p. 132.

American Journal of Pathology, Boston

9: 1-147 (Jan.) 1933

Herpetic Infection of Chorio-Allantoic Membrane of Chick Embryo. J. R. Dawson, Jr., Nashville, Tenn.—p. 1.
Cellular Inclusions in Cerebral Lesions of Lethargic Encephalitis. J. R. Dawson, Jr., Nashville, Tenn.—p. 7.
Tuberculous Vegetations of Trunk of Pulmonary Artery. P. Gross, Cleveland.—p. 17.
Micro-Incineration Studies of Human Coronary Arteries. D. Y. Ku, Cleveland.—p. 23.
Experimental Fat Embolism of Heart. S. A. Szurek and Z. G. Czaja, Chicago.—p. 47.
Body Length and Organ Weights of Infants and Children: Study of Body Length and Normal Weights of More Important Vital Organs of Body Between Birth and Twelve Years of Age. J. M. Coppoletta and S. B. Wolbach, Boston.—p. 55.
*Multiple Liver Abscesses Caused by Leptothrix, with Review of Leptothrical Infection. P. N. Harris, Nashville, Tenn.—p. 71.
Histologic Study of Case of Eastern Type of Rocky Mountain Spotted Fever. P. N. Harris, Nashville, Tenn.—p. 91.
Metastatic Calcification Occurring in Myelogenous Leukemia. D. A. DeSanto, New York.—p. 105.
Myeloblastic Sarcoma of Scapula Associated with Chronic Splenomyelogenous Leukemia. F. S. Dubois, Tuscaloosa, Ala.—p. 113.
Retotheliosarcoma (Reticulosarcoma) of Cerebral Hemisphere: Report of Case. N. C. Foot and S. Cohen, Cincinnati.—p. 123.
Experimental Study of Effects of Potassium Bichromate on Monkey's Kidney. W. C. Hunter and J. M. Roberts, Portland, Ore.—p. 133.

Multiple Liver Abscesses Caused by Leptothrix.—Harris reviews the literature pertaining to leptothrices pathogenic to man and reports a case of leptothricosis in which multiple liver abscesses were formed, with rupture of one abscess into the base of the right lung and formation of a lung abscess, and rupture of another in the left lobe of the liver, leading to the production of pericarditis. The organism was isolated in pure culture from the liver and successfully carried in vitro through many generations. No other organisms were present in the lesions. Experimental work with the organism showed it to be slightly pathogenic for rabbits and guinea-pigs. This organism has apparently never been previously encountered.

American Journal of Syphilis, St. Louis

17: 1-160 (Jan.) 1933

Some Practical Problems in Control of Syphilis. W. Clarke, New York.—p. 1.
Syphilis in Euphrates Arab: Section II. Clinical Study of Arab Syphilis. E. H. Hudson, Deir-ez-Zor, Syria.—p. 10.
*Differential Effects of Arsphenamine and Tryparsamide. H. C. Solomon, S. H. Epstein and A. Berk, Boston.—p. 45.
Fatalities Following Use of Neoarsphenamine: Discussion of Examples of Three Unusual Types of Reaction. A. Cantarow and B. L. Crawford, Philadelphia.—p. 53.
*Treatment of Syphilis with Hyperpyrexia Produced by Diathermy. N. N. Epstein and S. B. Paul, San Francisco.—p. 72.
*Electrocardiographic Findings in Primary and Very Early Secondary Syphilis. L. Chargin and S. S. Paley, New York.—p. 82.
Serodiagnosis of Syphilis: Evaluation of Certain Complement Fixation and Precipitation Methods. G. A. Denison and Evelyn G. McDonald, Birmingham, Ala.—p. 90.
Comparison of Results Obtained with Kahn, Kline, Hinton, Meinicke, Sachs-Georgi and Rosenthal Tests for Syphilis. K. L. Burdon and L. B. Duggan, St. Louis.—p. 110.
Modification of Deiterle's Method for Demonstrating Spirochaeta Pallida in Single Microscopic Sections. A. A. Krajian, Los Angeles.—p. 127.

Effects of Arsphenamine and Tryparsamide.—Solomon and his associates state that a distinct difference between arsphenamine and tryparsamide is shown by their opposite effects in systemic syphilis and neurosyphilis, in sodoku (ratbite fever) and in malaria. Arsphenamine is more effective in early and late systemic syphilis, presenting skin, mucous membrane and bone lesions, whereas tryparsamide is more effective when the central nervous system is involved. Arsphenamine cures sodoku, whereas tryparsamide does not, but, nevertheless, it modifies the skin or local lesions as effectively as does arsphenamine. Arsphenamine is a plasmodicide and cures inoculation malaria, whereas tryparsamide has no noticeable effect either on the plasmodia in the blood or on the course of the fevers. The authors therefore conclude that arsphenamine is both a spirocheticide and a plasmodicide, while there is no evidence that tryparsamide has any direct lethal effect on the Spirochaeta pallida, the Spirochaeta morsus-muris or the plasmodia of inoculation tertian malaria. The beneficial action of tryparsamide on syphilis of the nervous system must be founded on some other characteristic. The results of the experiences in sodoku suggest that there is a stimulation to the local tissue which heals promptly without destruction of the spirochetes in the blood stream. How this stimulation is produced is not at all clear. One may be justified in assuming that, as in the case of the local beneficial action in sodoku, so in syphilis of the central nervous system, tryparsamide has a local action within the local areas of the nervous system.

Treatment of Syphilis with Hyperpyrexia.—Epstein and Paul treated a group of twenty-eight patients with various forms of syphilis of the central nervous system by means of hyperpyrexia produced by diathermy. They used a diathermy apparatus capable of elevating the body temperature to 41.1 C. (106 F.). They employed, with some modifications, the technic of Neymann and Osborne. Striking improvement was noted in thirteen patients with tabes dorsalis. The relief of pain was an outstanding feature. Improvement was noted in patients with other types of syphilis of the central nervous system, but this was not as marked as in the tabetic group. Serologic changes did not parallel the clinical improvement. One fatality occurred early in this work. The patient was a man, aged 67, with an extremely demented type of dementia paralytica. He was obviously a poor physical risk, but because of the rapid progress of his dementia his private physician felt the risk justifiable. Death followed the first treatment. His temperature rose to more than 106.8 F. In this patient a secondary rise in temperature occurred three hours after the

current was shut off. His blood pressure was 220/0 five hours before death and 90/0 a few moments before.

Electrocardiographic Observations in Syphilis.—Chargin and Paley studied for electrocardiographic changes fifty cases of early syphilis of duration not longer than three months. All the patients were young adults below the age of 35, with the exception of three who were between 35 and 40. Care was taken to exclude all other diseases that might be responsible for cardiovascular changes, such as rheumatism, chorea, hypertension, arteriosclerosis and acute infectious diseases. Thirteen patients, or 26 per cent, had clinical right axis deviation. Three, or 6 per cent, had an index below 10. Five, or 10 per cent, had an index between 10 and 15, and the remaining five, or 10 per cent, had an index over 15. The high percentage of right axis deviation would seem to indicate that it is more than a mere coincidence. It may have some bearing on the syphilitic infection. Further observations are necessary to determine this. Four patients, or 8 per cent, showed definite myocardial involvement, as evidenced by changes in the T wave. One case showed isoelectric T waves in leads II and III; three cases showed definite inversion of the T waves in leads II and III; the last three were associated with definite right axis deviation with an index over 15.

Annals of Internal Medicine, Ann Arbor, Mich.

6: 855-1012 (Jan.) 1933

*Clinical Significance of Leukopenia, with Especial Reference to Idiopathic Neutropenia. S. R. Mettier and H. T. Olsan, San Francisco. —p. 855.
Clinical Study of Graves' Constitution and Its Relation to Thyroid Disease. C. H. Fortune, Lexington, Ky.—p. 869.
Photosensitization. H. F. Blum, Berkeley, Calif.—p. 877.
Cardiac Complications of Trichterbrust. J. G. Carr, Chicago.—p. 885.
*Unusual Speech Disorder Following Encephalitis Lethargica: Its Interpretation and Therapeutic Management. A. Gordon, Philadelphia.—p. 895.
*Oral Administration of Metaphen in Treatment of Gastric and Duodenal Ulcers. C. M. Trippe, Asbury Park, N. J.—p. 901.
Rôle of Bowel in Chronic Arthritis. E. F. Traut, Chicago.—p. 913.
*Sporadic Benign Rickettsial Fever with Occasional Exanthem. N. Toomey, Palmyra, Mo.—p. 921.
Obstinate Case of Intestinal Myiasis. W. B. Herms, Berkeley, Calif., and Q. O. Gilbert, Oakland, Calif.—p. 941.
Familial Congenital Clubbing of Fingers and Toes: Report of Case. O. B. Ragins and E. B. Freilich, Chicago.—p. 946.
Complete Situs Transversus with Auricular Fibrillation and Flutter: Report of Case. H. A. Robinson, Detroit.—p. 948.
Medical Poet of Middle Border, William Savage Pitts, M.D. L. H. Roddis, Washington, D. C.—p. 952.

Clinical Significance of Leukopenia.—Mettier and Olsan present five cases of severe leukopenia of obscure origin and call attention to the different types of bone marrow reaction occurring in the various cases; namely, aplasia of the bone marrow, depression of leukopoiesis only, hyperplasia of the leukopoietic tissue, and hyperplasia of the erythropoietic tissue. They also report a case of leukopenia associated with lymphangitis of the arm in a woman in whom recovery occurred during the course of the administration of nucleotide K-96. Among the 10,000 case histories of the patients cared for in the University of California Hospital from 1920 to 1931, examination of the blood revealed leukopenia in 1,167, or 11.67 per cent, of the cases. Of the 1,167 cases, leukopenia occurred in 611 females, or 52.4 per cent, and in 556 males, or 47.6 per cent. Leukopenia occurred frequently as a mild manifestation in patients with vague symptoms of one sort or another, such as chronic fatigue; 9.7 per cent of the cases of leukopenia were classified, therefore, as benign leukopenia of obscure origin. A table of the frequency incidence of leukopenia is given.

Speech Disorder Following Epidemic Encephalitis.—Gordon describes the speech disorder in two patients following epidemic encephalitis, in whom, in the beginning of their speech, the tongue rolls, curls and places itself mostly on the right side. The muscles near the angles of the mouth and those of the chin contract more than the other muscles of the cheeks, so that two deep furrows appear on both sides of the mouth. It seems that all the other muscles of the patients' faces remain immobile while the lip muscles function. There was also a tendency for the lower jaw to droop while speaking. The author emphasizes the fact that, in addition to an organic lesion ordinarily found in encephalitis, there are other factors of a functional character which may elucidate the nature of the multiple postencephalitis disorders observed so frequently. An organic lesion alone will not explain its modus operandi in creating all these disorders, especially those of an affective character. Recognition of this principle is of high value in therapeutic endeavors. His two cases present an excellent illustration of this contention, as both patients had difficulties of an affective character at the onset of the disorder and, as an outlet from the states of anxiety in which they found themselves, they developed a substitution or a compensation phenomenon in the form of a compulsion neurosis.

Metaphen in Treatment of Ulcers.—Trippe gave a 1 : 500 solution of metaphen orally to patients with symptoms of chronic abdominal distress, in the dose of 4 cc. three times a day with gratifying results. His study includes an analysis of eighty-two patients, twenty-six with gastric and fifty-six with duodenal ulcers. He made complete roentgen studies of twenty-seven of these cases, and confirmed the diagnosis in many cases by a test meal and a microscopic study of the gastric contents. Relief from pain was obtained in practically all cases in an average of three days' time. He observed no toxic effects. Complete disappearance of gastric and duodenal ulcers, consequent on treatment with metaphen, was demonstrated by means of roentgen studies made before and after treatment. He concludes that a possible explanation of the action of metaphen, primarily a bactericidal agent, may lie in the part played by infection in the evolution of ulcers of the type considered, as has been recently emphasized by several authors.

Sporadic Benign Rickettsial Fever.—An intensely febrile typhus-like disease of short duration was observed to cause a sharply localized group of cases in the west-central part of Illinois during the early part of August 1932. Toomey states that, of the eleven known cases, ten were without exanthem. In one case on the fourth day there developed a lenticular, ascending, nonhemorrhagic erythematomacular rash resembling the rash of mild Rocky Mountain spotted fever except that it disappeared suddenly with the lysis of the fever. The disease was characterized by an incubation period of about twelve days, sudden onset, abrupt rise of temperature (usually with headache, chilliness and vomiting) and a high continued fever, which fell by abrupt lysis after three or four days. A remission of from one to two days was frequently followed by a secondary rise of temperature lasting one day. Constipation and an intense nonproductive conjunctivitis (not accompanied by lacrimation) were characteristic symptoms. Coryza, pharyngeal engorgement and chest symptoms were absent, except for an occasional slight dry cough toward the end of the disease. Neuralgic and rheumatoid pains were absent, and the sensorium remained clear. Hyperhidrosis and a regional lymphadenopathy were occasionally observed. There was no mortality. The disease caused a slight leukocytosis due to a relative and absolute increase in the lymphocytes and large mononuclears. Considerable secondary anemia developed. Although the disease was undoubtedly insect borne, a primary sore at the site of inoculation could not be made out in any case. Small erythematous papules, the sites of insect bites, were commonly observed to become anemic (white macules) following the termination of the fever. The vector was not identified but there was evidence suggesting that the virus was transmitted by a hymenopteron of the genus Halictus (family Halictidae). Agglutination tests against strains of Proteus X organisms showed an affinity for the nonindologenic or Kingsbury strains in addition to a moderate affinity for the X strains. The X strains were not significantly agglutinated. There was an inconstant and, at most, a slight increase in the agglutination titer during convalescence. Guinea-pigs were found moderately susceptible to the virus. The disease in guinea-pigs was without a noticeable scrotal lesion and was principally neurotropic, thus resembling epidemic typhus more than certain strains of endemic typhus or Rocky Mountain spotted fever. Inoculation of convalescent guinea-pigs with the virus or Rocky Mountain spotted fever showed that the guinea-pigs were susceptible to the spotted fever virus but appeared to have a partial or group immunity to spotted fever. Preliminary studies indicate that the disease occurs not uncommonly in a mild form, and that it is the cause of some of the cases heretofore called "summer flu" or influenza. Clinically and immunologically, it is necessary to recognize this disease as a separate entity. Serologically, it is related to the diseases having an affinity for the

nonindologenic (Kingsbury) strains of the Proteus X organisms. An approximate clinical similarity to the American mountain tick fever is noted.

Annals of Surgery, Philadelphia

97: 161-320 (Feb.) 1933

Treatment of Fractures in Cincinnati General Hospital. J. A. Caldwell, Cincinnati.—p. 161.
Treatment of Joint Fractures. R. Colp and S. Mage, New York.—p. 177.
Late Results of Separation of Epiphysis. J. Ireland, Chicago.—p. 189.
*Fractures of Head and Neck of Radius. J. V. Bohrer, New York.—p. 204.
End-Results of Carpal-Scaphoid Fractures. L. E. Snodgrass, Philadelphia.—p. 209.
Reconstructive Operation for Nonreducible Fractures of Head of Humerus. L. Jones, Kansas City, Mo.—p. 217.
Elephantiasis Nostra. G. P. Muller and C. G. Jordan, Philadelphia.—p. 226.
Intracapsular Fractures of Neck of Femur: Closed Double-Screw Method for Reduction and Fixation: Preliminary Report. L. Jones, Kansas City, Mo.—p. 237.
*Localized Tuberculosis of Chest Wall. R. H. Meade, Jr., Philadelphia.—p. 247.
*Full Thickness Skin Graft: Its Field of Applicability and Technical Considerations. J. H. Garlock, New York.—p. 259.

Fractures of Head and Neck of Radius.—From his observation of twenty cases of fractures of the radius over a period of ten years and a review of the literature, Bohrer concludes that: 1. Fractures of the head and neck of the radius, in children, should be treated conservatively unless there is marked displacement of the fragment. 2. In cases of marked displacement of the fragment, early operation with replacement of the fragment is preferable to resection. 3. If resection is done, synosteosis of the radius and ulna in the resected area will develop in about 50 per cent. This synosteosis occurs several months after operation. 4. In resected cases a stable, nonpainful joint may be expected. 5. Flexion and extension are seldom limited. 6. In resected cases an increased carrying angle always develops, apparently from a lack of growth at the proximal end of the radius. 7. In adults, simple fracture with displacement, even if the fracture line involves the articular surface, should be treated conservatively. 8. In operative cases, resection of the entire head of the radius is the operation of choice. A stable, nonpainful joint, without loss of function, may usually be expected.

Localized Tuberculosis of Chest Wall.—Meade reports three new cases of localized chest wall tuberculosis and states that there is a striking difference in the number of cases of localized chest wall tuberculosis seen in hospital practice. This can be accounted for by the difference in attitude of the doctors referring patients to surgeons. The process may arise by extension from foci in the lymph nodes of the chest wall, or as a hematogenous infection. In order of frequency the bony ribs come first, the sternum and soft parts next, and the cartilage last. Diagnosis can rarely be made before the cold abscess appears. Examination of its contents will almost invariably settle the question. Treatment must be general and local. Excellent results have been obtained by radical excision well beyond the limits of the involved tissue, removal of all exposed cartilage, and air-tight closure. Drainage should be used only in cases presenting mixed infection.

Full Thickness Skin Graft.—Garlock states that the full thickness skin graft has a fairly wide field of applicability. It should be reserved to cover fresh surgical defects and should not be used for granulating wounds. The pedicled skin flap should be used when the local condition requires more underlying tissue than a full thickness graft can supply. There are numerous features in the use of this type of graft which the surgeon must recognize. These include the great probability of necrosis if placed over bare bone or tendon, future shrinkage, changes in color, the development of heavy scars at the edges, and the growth of hair. The author presents an operative technic for full thickness skin grafts which includes complete excision of scar tissue, rigid asepsis, complete hemostasis, the application of firm, even pressure over the grafted area, and complete fixation of the part by the use of appropriate splints, and strives to eliminate any form of trauma to the graft. Careful attention to the details of the postoperative care increases the chances of a successful take.

Arch. of Physical Therapy, X-Ray, Radium, Chicago

14: 69-124 (Feb.) 1933

New Form of d'Arsonvalization: Short Waves. A. Halphen and J. Auclair, Paris, France.—p. 69.
*Use of "Cold Quartz" Light in General Practice. H. M. F. Behneman, San Francisco.—p. 72.
Factors Influencing End-Results of Electrosurgery. G. E. Ward, Baltimore.—p. 78.
Surgical Diathermy in Treatment of Cervicitis with New Type of Flexible Spiral Electrode. H. E. Kimble, Chicago.—p. 83.
Use of Radium in Benign Lesions of Nose and Throat. G. A. Robinson, New York.—p. 86.
General Principles of Hydrotherapy. J. B. Nylin, Philadelphia.—p. 89.
Modern Concepts in Treatment of Superficial Malignant Growths. J. J. Eller, New York.—p. 95.
*Radium in Lesions of Cornea. Laura A. Lane, Minneapolis.—p. 99.
What Do You Think of Physical Medicine? Ethel M. Shaull, Philadelphia.—p. 105.

Cold Quartz Light in General Practice.—Behneman gives a summary of the results of cold quartz radiation in eighty-one cases including sluggish ulcers, burns, endocervicitis, fistulas and rectal ulcers, Vincent's infection (trench mouth), acne, boils and carbuncles, nasal antrum disease with sinus involvement and lesions of the urinary tract. He states the advantages of this type of generator as follows: It is within the wavelength of high germicidal action. It burns at a low temperature with possibilities of application directly to the skin. The orificial applicator has emission from its entire surface area. The grid lamp may be moved, so that perpendicular ray exposure is possible at all times. Little erythema is evidenced for the radiation produced. There is a constancy of intensity. The handling and use are safe and convenient because of its light weight and detachability. There is usually a relatively low formation of pigmentation. There appears to be little of the red of the visible spectrum. It may be operated while in motion. The temperature at which it burns allows any design of applicator for insertion into body cavities.

Radium in Lesions of Cornea.—Lane states that radium has a beneficial and analgesic effect in a number of benign and malignant corneal lesions. Among the benign lesions responding to radium therapy are ectasias, fistulas, keratitis vasculosa, keratitis vesiculosa, keratitis rosacea, tuberculosis involving the cornea, keratitis posterior, and keratitis ulcerosa in its various forms with or without hypopyon. One of the greatest fields of usefulness is in the thinning of leukomas and opacities of the cornea, and the earlier radium is used the better the result. In the malignant lesions radium appears to offer, in many instances, better results than surgery alone, as there is less loss of tissue. Considerable judgment is necessary as to the dosage. Frequent biomicroscopic studies are necessary to obtain the best results with radium in benign and malignant lesions of the cornea. The application of radium to the cornea calls for a knowledge of the physics of radium and of the structure of the cornea and of the eye, for supportive treatment of the patient, and should be undertaken only by those who are willing to give individual attention to its use.

Colorado Medicine, Denver

30: 37-72 (Feb.) 1933

Discussion of Some Recent Advances in the Commoner Nervous Diseases. T. H. Weisenburg, Philadelphia.—p. 41.
Treatment of Burns. N. A. Madler, Greeley.—p. 46.
*Mechanism of Edema. T. P. Sears, Denver.—p. 50.

Mechanism of Edema.—Sears reviews the various theories of the mechanism of edema. He presents an outline of a new theory of nephritis, which explains edema on the basis of an increased avidity of the tissues themselves whereby water is held in the areas of edema and not presented to the kidneys for excretion. The same situation is claimed for the metabolites. He concludes that edema due to cardiac or nephritic causes is secondary to an imbalance between the filtration and osmotic pressures of the blood stream, plus changes in the permeability of the capillary walls and an increase in the avidity of the tissues themselves for water. The local edema of venous obstruction and the edema of starvation belong in this group. Inflammatory edema and possibly anemic edema is assignable to changes in capillary permeability secondary to traumatism, infection or anoxemia. In all types of edema, a normal protein diet is indicated with only such salt restriction as is consistent with the type of edema found.

Delaware State Medical Journal, Wilmington

5: 23-46 (Feb.) 1933

Precautions in Tonsil Operations, with Especial Reference to Blood Supply. W. O. LaMotte, Wilmington.—p. 23.
Practical Application of Blood Chemistry. J. A. Kolmer, Philadelphia. —p. 30.
Ludwig's Angina. E. L. Stambaugh, Lewes.—p. 33.

Johns Hopkins Hospital Bulletin, Baltimore

52: 119-172 (Feb.) 1933

*Skin-Reacting Substances Present in Urine During Acute Streptococcic Infections. E. T. Conybeare, Baltimore.—p. 119.
*Observations on a Case of Postoperative Hypoparathyroidism. R. Ellsworth, Baltimore.—p. 131.
Studies in Experimental Syphilis: X. Observations on Cross-Inoculations with Heterologous Strains of Syphilitic Virus. A. M. Chesney, T. B. Turner and F. H. Grauer, Baltimore.—p. 145.
*Hyperproteinemia Associated with Multiple Myeloma: Report of Case in Which an Extraordinary Hyperproteinemia Was Associated with Thrombosis of Retinal Veins and Symptoms Suggesting Raynaud's Disease. M. M. Wintrobe and Mary V. Buell, Baltimore.—p. 156.
Studies on Urea-Splitting Enzyme Found in Gastric Juice. L. Martin, Baltimore.—p. 166.

Urine in Acute Streptococcic Infections.—According to Conybeare, colloidal material extracted from the urine of patients suffering from acute infectious conditions associated with B-hemolytic streptococci is capable, in a high proportion of cases, of producing a delayed erythematous reaction when injected intradermally into susceptible subjects. Similar material extracted from the urine of clinically normal persons is, by comparison on the same test subjects, relatively inactive as regards the property of producing a skin reaction. Such material from the urine of scarlet fever cases appears to contain the "erythrogenic toxin" (Okell) of the B-hemolytic streptococcus. In five of seven patients with acute pharyngitis, throat cultures showed that hemolytic streptococci of the B type were the predominant organisms. Positive reactions were produced by the extracts derived from four of these five patients. A similar procedure was carried out on the urine of three patients presenting a clinical diagnosis of erysipelas. The extracts obtained in all three cases gave positive reactions. Extracts made from four albuminous urines associated with streptococcic infection gave positive reactions.

Postoperative Hypoparathyroidism.—Ellsworth reports a case of postoperative hypoparathyroidism in a Negro woman, aged 36, in whom a daily calcium intake of 2 Gm. and a limitation of the daily phosphorus intake to 1 Gm. resulted in partial relief of symptoms and a rise of the serum calcium and phosphorus. Further limitation of the phosphorus intake to 0.27 Gm. daily resulted in further relief of symptoms, a slightly higher rise in serum calcium and a fall of serum phosphorus toward normal. Finally, when the patient was at home and exercising, the regimen was ineffective. Raising the calcium ingestion to 5 Gm. daily by giving calcium chloride resulted in a return toward normal of the serum calcium, a fall toward normal of the serum phosphorus and a relief of symptoms. In other cases, in which similar ratios of phosphorus to calcium ingested have been tried, beneficial results have been obtained. The author places emphasis on the regulation of both the calcium and the phosphorus intake when treating hypoparathyroidism. The administration of viosterol was followed in his patient by precipitation of active tetany. He has made observations on the effect of the administration of a magnesium salt. Injection of parathyroid extract resulted in a rapid fall of serum phosphorus, a rise of serum calcium and symptomatic improvement.

Hyperproteinemia Associated with Multiple Myeloma.—Wintrobe and Buell observed in the blood of a patient who presented symptoms of coldness, blanching and a peculiar mottling of the extremities, as well as other signs of disturbed circulation, a voluminous quantity of a substance which invariably was precipitated immediately on withdrawal of the blood from the body. This material was found to be protein in nature. Necropsy proved that the patient suffered from multiple myeloma. The author discusses the chemical nature of this protein and considers its relation to Bence-Jones protein. Among approximately 500 case reports of multiple myeloma, abnormality in the blood plasma has been found in only eight. Even in comparison with these cases, the author's case seems unique.

Journal of Bacteriology, Baltimore

25: 101-238 (Feb.) 1933

Application of Statistics to Problems in Bacteriology: I. Means of Determining Bacterial Population by Dilution Method. H. O. Halvorson and N. R. Ziegler, Minneapolis.—p. 101.
Relation of Changes in Morphology and Metabolism in Bacillus Coli. W. F. Lange, St. Louis.—p. 123.
Disappearance of the Coli-Aerogenes Group in Natural Purification Processes as Determined by Direct Plate Counts. C. C. Ruchhoft, E. W. Coulter, C. L. Adams and A. L. Sotier, Chicago.—p. 143.
Single Cell Dissociation of Acid Fast Bacteria: Mycobacterium of Avian Tuberculosis; Mycobacterium of "Rat Leprosy." M. C. Kahn and Helen Schwarzkopf, New York.—p. 157.
Some Factors Involved in Biologic Production of Acetone and Butyl Alcohol. L. Weinstein and L. F. Rettger, New Haven, Conn.—p. 201.

Journal of Clinical Investigation, New York

12: 1-246 (Jan.) 1933

*Studies on Gastric Secretion. T. G. Klumpp, Cleveland, and M. A. Bowie, Rosemont, Pa.—p. 1.
Studies of Basal Work and Output of Heart in Clinical Conditions. I. Starr, Jr., L. H. Collins, Jr., and F. C. Wood, Philadelphia.—p. 13.
*Treatment of Agranulocytosis with Adenine Sulphate. P. Reznikoff, New York.—p. 45.
Studies in So-Called Water Intoxication. F. S. Smyth, W. C. Deamer and N. M. Phatak, San Francisco.—p. 55.
Studies on Gallbladder Function: IX. Anion-Cation Content of Bile from Normal and Infected Gallbladder. C. G. Johnston, I. S. Ravdin, C. Riegel and C. L. Allison, Philadelphia.—p. 67.
Unavoidable Error in Differential Count of Leukocytes of Blood. C. W. Barnett, San Francisco.—p. 77.
Addis Sediment Count in Normal Children. J. D. Lyttle, New York. —p. 87.
Addis Sediment Count in Scarlet Fever. J. D. Lyttle, New York.—p. 95.
Effects of Temperature and of Tissue Pressure on Movement of Fluid Through Human Capillary Wall. E. M. Landis and J. H. Gibbon, Jr., Philadelphia.—p. 105.
Note on Cutaneous Venous Blood Sugar Difference in Normal Males and Females and in Thyroid Disease. L. Jonas, Philadelphia.—p. 139.
*Inequality of Blood Pressure in Brachial Arteries, with Especial Reference to Disease of Arch of Aorta. H. M. Korns and P. H. Guinand, Iowa City.—p. 143.
*Gastric Secretion in Fever and Infectious Diseases. H.-C. Chang, Peiping, China.—p. 155.
Collateral Respiration: Spontaneous Reinflation of Atelectatic Pulmonary Lobule by Collateral Respiration. C. M. Van Allen and Y. C. Soo, Peiping, China.—p. 171.
Attempts to Produce Experimental Gastritis. F. D. W. Lukens, Philadelphia.—p. 181.
Relation Between Plasma Protein Content, Plasma Specific Gravity and Edema in Dogs Maintained on Protein Inadequate Diet and in Dogs Rendered Edematous by Plasmapheresis. A. A. Weech, New York; C. E. Snelling, Toronto, Canada, and E. Goettsch, New York.—p. 193.
Effect of Serum Transfusion on Plasma Protein Depletion Associated with Nutritional Edema in Dogs. A. A. Weech, E. Goettsch and E. B. Reeves, New York.—p. 217.
Study of Etiologic Relationship Between Pellagra and Pernicious Anemia. T. D. Spies and W. Payne, Cleveland.—p. 229.
Rates of Utilization of Thyroxine and Desiccated Thyroid in Man: Relation Between Iodine in Desiccated Thyroid and Thyroxine. W. O. Thompson, L. L. McLellan, Phebe K. Thompson and Lois F. N. Dickie, Chicago.—p. 235.

Gastric Secretion.—Klumpp and Bowie made a total of 357 analyses on ninety-eight subjects under controlled conditions. They noted that in a given individual the secretion of acid in response to a uniform stimulus tends in general to remain within a broad range. Occasional wide fluctuations are, however, encountered. One negative histamine test is not conclusive evidence of achlorhydria. The volume of gastric secretion in response to a uniform stimulus fluctuates widely, and no relation between volume and acidity is found. In a series of duplicate analyses, histamine elicited consistently higher values for free and total acid than the Ewald and alcohol tests. The maximum secretion of acid was attained between thirty and forty-five minutes after the injection of histamine. After the Ewald and alcohol tests, the maximum response came at the end of an hour or later. The alcohol test gave higher values for free acid than the Ewald meal, but the latter evoked higher total acidities in duplicate analyses. In duplicate analyses, achlorhydria appeared more frequently after the Ewald meal than after alcohol, and least frequently after histamine. Administration of repeated gastric stimuli induced a temporary augmentation of acidity after each, followed by a pronounced falling off, suggestive of a fatigue phenomenon. There was no fundamental difference in the power of the three test meals to elicit this response. Atropine in moderate doses tends to prolong the high level of titratable acidity which ordinarily occurs after histamine. A previous breakfast tends to cause lower acid values and higher total acidities in response to a standard stimulus. Intravenous calcium chloride increases gastric secre-

tion. The authors discuss the theoretical and practical advantages of studying gastric function by means of the histamine stimulus.

Treatment of Agranulocytosis.—Reznikoff presents the results of adenine sulphate therapy in fifteen uncomplicated cases of agranulocytosis in which recovery followed in eleven of the patients. In severely complicated cases of agranulocytosis or in aleukemic leukemia and aplastic anemia, adenine sulphate has not been effective in the doses used in this study. He observed that 1 Gm. of adenine sulphate boiled in from 35 to 40 cc. of saline solution, given warm, intravenously three times daily for at least three days for an adult, is nontoxic, and he suggests that amount as the dose in treating agranulocytosis in adults. This is probably not a maximum dose, but in most patients who responded favorably it was found that with such quantities distinct improvement occurred in the symptoms, in decline of the fever and in an increase of granulocytes within forty-eight hours, frequently within twenty-four hours. As much as 10.4 Gm. has been given to a patient within seven days with no ill effects.

Inequality of Blood Pressure.—Korns and Guinand analyze the data obtained by bilateral brachial pressure measurements in 1,000 normal subjects. What they have arbitrarily designated as a significant sphygmic inequality occurred 439 times in 378 persons. Significant inequalities in pulse pressures appeared in 274 persons, 67 of whom failed to show differences of 10 mm. or more between the two systolic or diastolic levels; nearly three fourths of the higher pulse pressures were dextrolateral. These pressures were measured simultaneously in the two arms, but for all practical purposes consecutive measurement gives equally satisfactory results. Sphygmic inequality without organic disease is probably always transitory, and it is reasonably certain that all normal persons manifest it at one time or another. The inequality may involve only the systolic pressures or only the diastolic or both, and if the two levels are disparate the inequality may be concordant (both right higher than both left, or vice versa) or discordant (right systolic higher than the left and left diastolic higher than the right, or vice versa). In some persons the higher pressure is irregularly heterolateral; in others it appears to be always homolateral. There is no evidence that right-handedness or left-handedness plays any part. The physiology of transitory disparities in brachial pressures is not understood. Sphygmic inequality in the brachial or carotid arteries cannot be regarded as a sign of disease of the aorta or its branches, unless it can be shown to be permanent.

Gastric Secretion in Fever and Infectious Diseases.—Chang studied the gastric function by the histamine method in 106 febrile Chinese patients. On the average there was a decrease of the gastric acidity to one third of the normal. The total chloride and the volume of secretion showed a similar but less marked change. The decrease of gastric function was proportional to the height of the fever. Anemia and general physical fitness played no important part. Thirty-three of the 106 patients showed achlorhydria, an incidence of 31 per cent. This is about eight times the normal incidence. Fifty-six patients were reexamined in convalescence. Of these, 90 per cent recovered their normal gastric function soon after the disappearance of fever. The incidence of "permanent" post-febrile achlorhydria was only 5 per cent, which is not much higher than is expected in a healthy Chinese population. Infectious diseases are probably not important causes of gastric anacidity. This definite but transitory impairment of the gastric function cannot be explained on the basis of dilution, nor can it be entirely attributable to duodenal regurgitation. The author suggests a hypothesis in which the pathologic change in the stomach during fever is compared with cloudy swelling in the kidneys. In both instances the functional disturbance tends to be transient.

Journal of Comparative Neurology, Philadelphia

57: 1-197 (Feb. 15) 1933

Studies of Cerebral Function in Learning: IX. Mass Action in Relation to Number of Elements in Problem to Be Learned. K. S. Lashley and L. E. Wiley, Chicago.—p. 3.

The Reptilian Optic Tectum. G. C. Huber and Elizabeth C. Crosby, Ann Arbor, Mich.—p. 57.

Origin and Course of Fasciculus Uncinatus (Russell) in the Cat, with Observations on Other Fiber Tracts Arising from Cerebellar Nuclei. A. T. Rasmussen, Minneapolis.—p. 165.

Journal of Infectious Diseases, Chicago

52: 1-137 (Jan.-Feb.) 1933

*Serologic and Cultural Studies of Meningococci, with Especial Reference to Type V. Bess E. Segal, Philadelphia.—p. 1.

Relation of Gastro-Intestinal Poison to Other Toxic Substances Produced by Staphylococci. O. C. Woolpert and G. M. Dack, Chicago.—p. 6.

Attempt to Confirm Existence of Filtrable Cycle of Bacteria by Use of K Medium. C. V. Seastone and Mary B. Lawrence, Boston.—p. 20.

*Method for Securing Clear Serums from Milk of Cows and Goats for Agglutination Tests, with Especial Reference to Undulant Fever. I. C. Hall and R. Learmonth, Denver.—p. 27.

Colony Formation of Diplococcus Rubeolae (Measles). Ruth Tunnicliff, Chicago.—p. 39.

*Further Attempts at Experimental Infection of Man with Bovine Strain of Brucella Abortus. P. Morales-Otero, San Juan, Puerto Rico.—p. 54.

Precision Photomicrography in Bacteriology. R. R. Mellon, Pittsburgh.—p. 60.

*Flatulent Diarrhea Due to Clostridium Welchii. C. I. Nelson, Fargo, N. D.—p. 89.

Medium for Isolation of Bacillus Pertussis. J. H. Bailey, Chicago.—p. 94.

Production of Antipertussis Serum of High Titer. J. H. Bailey, Chicago.—p. 97.

Infection of Accessory Sinuses in Vitamin A Deficiency: Rôle of Carotene in Infection of Upper Respiratory Tract. R. G. Turner and E. R. Loew, Detroit.—p. 102.

Incidence of Anaerobic, Filter-Passing Organisms in Normal and in Abnormal Respiratory Tract Conditions. P. H. Long and Barbara Muellerschoen, Baltimore.—p. 121.

Growth of Clostridium Botulinum on Synthetic Mediums. W. Burrows, Chicago.—p. 126.

Studies of Meningococci.—Segal states that of the hundred strains of meningococci studied by agglutination and absorption tests, thirty-six were found to be type I, ten type II, twenty type III and twelve type IV. An indirect method of classification was resorted to in five cases. Rabbits were immunized with each of the strains, and the agglutination and absorption reactions of the homologous antiserums were studied. Four were found to be of type IV and one of type III. Seventeen strains were found to differ serologically from any of the known types of meningococci. They formed a separate group distinguishable from the Gordon type strains by their agglutination and absorption reactions. The author does not consider the cultural and biochemical reactions of these seventeen strains sufficiently distinct to warrant their being placed apart as a new species. She proposes a fifth type for this group of seventeen strains, since the four existing Gordon types are differentiated purely on the basis of serologic differences. The seventeen strains forming a fifth type of meningococcus were all isolated from the spinal fluids of cases of clinical cerebrospinal meningitis occurring in the Chicago epidemic of 1928, in which all the four known Gordon types were encountered.

Method for Clear Serums for Agglutination Tests.—Hall and Learmonth recommend the use of chloroform, ether, benzene or carbon tetrachloride with rennet in securing clear milk serums from goats and cows for agglutination tests with Alcaligenes melitensis. The test tubes for the collection of milk samples are corked in the laboratory, each containing a few cubic centimeters of either solvent and a small amount of rennet extract. They are then taken to the dairy and used for the collection of each sample directly from the animal. Each tube is then shaken thoroughly for several minutes to extract the fat. On their return to the laboratory, the tubes are placed in the incubator at 37 C. for an hour to coagulate the casein. They are then centrifugated for fifteen minutes at 2,000 revolutions per minute to separate the milk serum, which will be found in a perfectly clear deep layer at the top, with a compact curd in the center and the solvent at the bottom. Milk serums collected in this manner may be preserved indefinitely without bacterial growth, owing to the germicidal action of the solvents. There is no interference with the agglutination test for Alcaligenes melitensis either by inhibition or by false agglutination. The authors also tested carbon disulphide and tetrachlorethane but found them unsatisfactory, although with both the milk serum separates at the top. But these two solvents definitely inhibit agglutination in the lower dilutions.

Experiments with Bovine Strain of Alcaligenes Abortus.—Morales-Otero gave three volunteer subjects the infected milk of a cow suffering from infection with Alcaligenes abortus. At the end of a six weeks period, none of the subjects had at any time shown any symptoms of the disease, and their blood cultures and blood agglutination tests remained per-

sistently negative for Alcaligenes abortus. Two other volunteers inoculated, one through normal and the other through abraded skin, with the strain isolated from the infected milk presented no symptoms of the disease, and their blood cultures were persistently negative for Alcaligenes abortus. In the blood of the latter two persons, the author observed a transitory positive agglutination of the organism (in a 1:40 dilution) during the third and fourth weeks of the experiment.

Flatulent Diarrhea Due to Clostridium Welchii.—Nelson reports local epidemics of flatulent dysentery in which anaerobes of the type of Clostridium welchii are indicated as the causal organisms. In the intestinal tract, acid readily inhibits their growth. Anaerobes and acidifiers appear to exist in the normal intestine in a fluxional condition of equilibrium with the acid producers dominant. Disturbance of this situation is followed by growth of the anaerobes with certain pathologic consequences. The presence of large numbers of anaerobes of the type of Clostridium welchii and Clostridium sporogenes in raw market milk is closely associated with the epidemics reported, which indicates a causal relationship between such organisms and the disease. Pasteurization of milk rich in anaerobic flora may accomplish another thing than the safeguarding of health for which it is intended. Milk contaminated with numerous spores of Clostridium welchii should not be pasteurized and distributed for consumption unless one can be certain that sufficient acid is produced in the intestine to restrain the development of the anaerobes.

New York State Journal of Medicine, New York

33: 1-64 (Jan. 1) 1933

Prognosis of Diabetes in Childhood. Priscilla White, Boston.—p. 1.
Painful Shoulder: Its Diagnosis and Treatment. C. Wallace, New York.—p. 7.
*Eosinophilia in Bacterial Reaction Sites: Preliminary Report. M. D. Touart and W. S. Thomas, New York, and H. K. Russell, Valhalla. —p. 11.
*Studies in Serum Treatment of Pneumonia. J. G. M. Bullowa, New York.—p. 13.
Treatment of Pneumonia by Physiologic Support. E. E. Cornwall, Brooklyn.—p. 18.
Why a Child Refuses to Eat. D. P. Arnold, Buffalo.—p. 20.
Minority Reports of Committee on the Costs of Medical Care. N. B. Van Etten, New York.—p. 22.

Eosinophilia in Bacterial Reaction Sites.—Touart and his associates present the data and results of an investigation into the incidence of local eosinophilia at the sites of early and late skin reactions following the intradermal injection of bacterial substances in twenty-two subjects. They observed that, at such reaction sites, an increase in the percentage of eosinophil cells in the fluid contents over that found in normal skin was present in most of the patients examined. They conclude that, should the observations of their small series of cases be corroborated by future investigations, eosinophilia will be recognized as being a regular feature of positive early and late reactions to intradermal injections of bacterial products. So far as eosinophilia indicates the presence of hypersensitiveness, it would appear that the early wheal and the late local reaction are but two manifestations of the same underlying condition; namely, bacterial hypersensitiveness.

Serum Treatment of Pneumonia.—Bullowa reports the conclusions based on experiences in the typing of 1,601 cases of pneumonia observed at Harlem Hospital during the last four seasons. He presents four cases, one illustrating the advantage of giving serum without waiting for the type, and showing that even massive invasion of the blood stream may be overcome with an adequate dose of serum; one in which inadequate amounts of serum were unavailing; one illustrating the difficulty in determining the type, and the occasional advantage of lung suction for this purpose; and one in which type I invaded blood and pleura with a concomitant infection with type VIb, in which recovery occurred after the administration of type I serum, and after an empyema due to pneumococcus type I was operated on. The author recommends the early and liberal administration of serum type I and type II in all cases, as they are the most frequent invaders. The best treatment of pneumonia requires specific serums of high titer, and accurate bacteriologic study. The physician must have this assistance in the treatment of pneumonia if he is not to be handicapped and lose patients he might otherwise save.

Philippine Islands Med. Association Journal, Manila

13: 1-64 (Jan.) 1933

Development of Modern Medicine. T. Roosevelt.—p. 1.
A Message. M. L. Quezon.—p. 4.
Philippine Islands Medical Association. V. G. Heiser, New York.—p. 5.
The Physician and the Community Welfare. E. D. Aguilar, Manila, —p. 7.
Future of Public Health Work in the Phillipine Islands. G. C. Dunham, Carlisle, Pa.—p. 17.
Diagnostic Value of Different Examinations of Pleural and Peritoneal Fluids in the Philippines. A. G. Sison, P. Ignacio and A. Adorable, Manila.—p. 22.
Nutritional Requirements of Filipinos. Isabelo Concepcion, Manila. —p. 26.

Surgery, Gynecology and Obstetrics, Chicago

56: 1-128 (Jan.) 1933

*Division of Nerves and Tendons of Hand, with Discussion of Surgical Treatment and Its Results. S. L. Koch and M. L. Mason, Chicago. —p. 1.
Observations on Mechanism and Signs of Separation of Placenta. L. Drosin, New York.—p. 40.
Postoperative Pulmonary Complications: I. Statistical Study Based on Two Years' Personal Observation. D. S. King, Boston.—p. 43.
*Two Rapid Tests for Pregnancy. J. E. Markee, Stanford University, Calif.—p. 51.
*Comparative Bactericidal Action of Mercurochrome and Iodine Solutions Used as Local Tissue Disinfectants. J. S. Simmons, Washington, D. C.—p. 55.
*Excretion Urography by Means of Intravenous and Oral Administration of Sodium Ortho-Iodohippurate, with some Physiologic Considerations: Preliminary Report. M. Swick, New York.—p. 62.
Use of Anticolibacillary Serum in Surgery. Hyacinthe Vincent, Paris, France.—p. 66.
Original Janeway Gastrostomy. H. E. Martin and W. L. Watson, New York.—p. 72.
Galeazzi Treatment of Scoliosis. P. Lewin, Chicago.—p. 79.
Old Traumatic Dislocation of Hip, with Especial Reference to Operative Treatment. L. J. Miltner and F. E. Wan, Peiping, China.—p. 84.
Type of Pelvis Intimately Associated with Occipitoposterior Position. H. Thoms, New Haven, Conn.—p. 97.
*Roentgen Measurements in Pregnancy: Few Practical Methods and Simplified Procedure Used by Author. G. E. Moore, Antigo, Wis. —p. 101.
Intrarenal and Perirenal Lipomas. J. deJ. Pemberton and J. M. McCaughan, Rochester, Minn.—p. 110.
Administration of Proctoclysters. G. L. Perusse, Jr., Chicago.—p. 116.

Division of Nerves and Tendons of Hand.—Koch and Mason are of the opinion that, in the surgical treatment of tendon and nerve injuries, several technical details are of great importance. First of these is care to insure asepsis. In their judgment nothing in the way of surgical skill, accurate apposition of tendons and nerves, postoperative care, or postoperative physical therapy can compensate for failure to secure healing by primary union. To render such healing as nearly certain as possible, the hand and forearm are carefully prepared by thorough and prolonged cleansing with soap and water the afternoon before operation. A sterile dressing is then applied and left in place until the patient reaches the operating room. Just before operation the hand and forearm are painted with a 5 per cent solution of trinitrophenol in 50 per cent alcohol. An area on the abdominal wall from which subcutaneous fat can be obtained is prepared in the same way, and if there is a likelihood that tendon grafts will be needed a foot also is prepared. In the operating room, sterile linen is applied in such a way that hand, abdomen and foot are accessible without shifting the sterile linen once it is in place. Just before the operative incision is made, the extremity is elevated for a few moments and the blood pressure cuff, applied beforehand, inflated to 220 or 230 mm. A bloodless field is indispensable for careful and accurate dissection and suture. Gentleness in the handling of tissue is of paramount importance. This gentleness must be directed not only to the handling of nerves and tendons but to the superficial tissues as well. The authors have used special instruments for holding tendons but have finally come to depend on simple instruments: fine tissue forceps with teeth, so-called Adson forceps; very fine, straight arterial needles for tendon and nerve suture; number D Corticelli white silk for the retention suture in the tendon and number A Corticelli black silk for the coaptation suture in the tendon and for nerve suture; fine round needles with fine silk for suturing the deep fascia and subcutaneous tissue; and fine cutting needles with fine dermal suture or silk for the closure of the skin. In no case in which the preoperative examination left the authors in doubt as to whether recovery was taking place and in which at operation nerve

ends were found united by a fairly normal appearing spindle of scar tissue were they able to secure a response from electrical stimulation of the nerve in question and, therefore, to determine that resection of the neuroma and suture would not be necessary. In the majority of such doubtful cases, resection of the scar tissue showed smooth connective tissue uniting the nerve ends and forming a complete block to the downgrowth of axons. Occasionally the excised section showed on its cut surface a few apparently intact nerve fibers, but in these cases also stimulation of the nerve above the site of injury had failed to produce contraction of the muscles supplied by the nerve in question.

Two Rapid Tests for Pregnancy.—Markee tested specimens of urine from 147 pregnant and twenty-six nonpregnant women by the direct and indirect tests for pregnancy based on the modification of the vascular rhythm in endometrial transplants by the presence of relatively large amounts of follicular hormone in the blood stream of the test animals. The direct test is made by injecting the follicular hormone, which has been extracted from 150 cc. of urine, into gonadectomized or nongonadectomized male or female rabbits. Only nonovariectomized female rabbits can be used in the indirect test. Since the intravenous injection of urine from pregnant women induces pseudopregnancy, the animals should not be used oftener than every third week. The diagnosis cannot be made until from seven to eight and a half hours after the injection of the urine. The main advantage of the direct over the indirect test is that the diagnosis can be made forty minutes after the injection or two hours after the specimen of urine has been obtained. Only a limited number of animals are required, since the same rabbit may be safely used every third day. A correct diagnosis of pregnancy by both the direct and the indirect methods was made as early as the forty-seventh day after the beginning of the last menstrual flow. The greatest difficulty encountered in the use of these tests for pregnancy is that the vascular changes observed in endometrial transplants in the anterior chamber of the eye are of two kinds; the rhythmic changes and those that follow fright. The former are arrested in vasodilatation by follicular hormone but the latter are not. The diagnoses of both tests agreed with the patients' clinical histories.

Mercurochrome and Iodine as Disinfectants.—Simmons treated skin abrasions, superficial incisions and deep incisions, contaminated with undiluted broth cultures of either Staphylococcus aureus or Streptococcus pyogenes, for various periods of time with solutions of iodine and mercurochrome, respectively. Application of tincture of iodine to 151 wounds contaminated with staphylococci resulted in sterile cultures as follows: abrasions, 83.4 per cent; superficial incisions, 83.1 per cent, and deep incisions, 31.2 per cent; while its use on 59 wounds contaminated with streptococci resulted in sterilization as follows: abrasions, 75 per cent; superficial incisions, 80.9 per cent, and deep incisions, 82 per cent. Of the 210 contaminated wounds treated with tincture of iodine, the cultures from 156, or 74.2 per cent, were sterile. Mercurochrome used under similar conditions caused relatively little reduction in the numbers of viable test organisms and failed to sterilize any of the 210 wounds. Mercurochrome is comparatively so ineffective in the sterilization of contaminated living tissues that it should not be considered as a substitute for iodine.

Excretion Urography and Sodium Ortho-Iodohippurate.—Sodium ortho-iodiohippurate, a halogen derivative of a substance normally found in the human urine, is proposed by Swick for excretion urography. He has obtained satisfactory urograms in adults with doses varying between 10 and 15 Gm. of ortho-iodohippurate dissolved in distilled water in 40 per cent concentration. The injection is carried out over a period of five minutes. The first film is taken ten minutes after the injection, two subsequent exposures being made at twenty minute intervals. Whenever functional disturbances are present, additional films should be taken to determine definitely the absence of visualization or the presence of late visualization. Aside from a slight sensation of generalized warmth, there have been no reactions. He has not observed thrombosis at the site of injection. To date, he has used the substance in 125 cases, having administered 20 and 30 Gm. of the substance in some cases. Occasionally transient vomiting occurred with the larger dose. Children under 13 years of age have received 10 Gm. doses without ill effects. A 1 year old child, in whom suitable roentgenograms were observed, showed no reactions from a 10 Gm. dose. In a 3 year old child receiving 6 Gm. of the substance, satisfactory roentgenograms were obtained. Oral administration in man has given encouraging results. Of fourteen cases, 50 per cent yielded satisfactory urograms. The dose administered by mouth has been between 10 and 15 Gm. dissolved in simple syrup. No reactions have been noted; diagnostic pictures have been obtained 90 and 135 minutes after administration. Further investigations with the oral administration are in progress in the hope of improving the results.

Roentgen Measurements in Pregnancy.—Moore describes the recognized methods in vogue today. These are methods based on mathematical calculations alone, methods based on mathematical calculations associated with triangulation and stereoroentgenographic procedures, and scale methods. The two latter types are the ones most commonly used today. The author's method is as follows: A point on the spine at the upper border of the fifth lumbar vertebra is located and a small piece of adhesive plaster is placed over this region. A line drawn from that point through the superior border of the symphysis pubis passes through the plane of the inlet of the pelvis. The patient is placed in a semirecumbent position with the pelvis centered over the cross lines on the surface of the Bucky diaphragm. By the use of calipers the distance from the adhesive tab to the Bucky is determined. The distance from the superior surface of the symphysis to the Bucky is measured with a ruler. The patient is adjusted so that these two measurements correspond. This places the plane of the inlet in a position parallel to the film. The tube is now centered to correspond with the cross lines of the Bucky at a focal film distance of 30 inches. An exposure is made of the pelvis. The patient is then removed from the table and the lead scale placed in the same plane as the pelvic inlet. This is accomplished by using the measurements previously mentioned and with the Bucky running a short exposure is made which superimposes the scale on the film. If one wishes to vary the technic by not having the plane of the pelvis parallel to the film, the procedure then varies and stereoscopic roentgenograms are taken of the pelvis instead of a flat film. The scale in the latter instance is superimposed on one of the stereoscopic films. The reason for adopting this method is that the stereoscopic roentgenograms give one a better visualization of the pelvic inlet, make the parts desired to be measured more distinct, and give one a better localization of these points. The pelvimeter consists of a lead sheet approximately 16 by 19 inches in size. This sheet of lead is one-sixteenth inch thick and held firmly to a board of the same dimensions by screws placed around the border of the lead plate. The board is approximately half an inch thick and made of basswood. Stiles are placed across each end of the board to prevent warping. Legs are mounted on the board and by the use of thumb screws the pelvimeter can be lowered or raised. The author recommends the following routine: 1. Roentgen pelvimetry on all primiparas as soon as pregnancy is diagnosed. 2. Roentgen pelvimetry on all multiparas with history of difficult labors. 3. Routine care and diet by an obstetrician in all cases when small pelvic inlets or a distorted pelvis is found. 4. Roentgenograms of all obstetric cases just prior to term. 5. Cephalometry, if the latter procedure shows any evidence of disproportion.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

41: 1-64 (Jan.) 1933

Prophylaxis in Diseases of Thyroid Gland: Presidential Address. M. O. Shivers, Colorado Springs, Colo.—p. 1.
Skin Temperature Studies III: Thrombosis of Arteries of Extremities, Brain, Heart and Kidney, with General Discussion of Vascular Disease: Case Report. W. K. Livingston, Portland, Ore.—p. 21.
*Regional Spinal Analgesia. G. R. Vehrs, Salem, Ore.—p. 26.
Seattle's First Physician: Dr. David Swinson Maynard. J. T. Mason, Seattle.—p. 34.

Regional Spinal Analgesia.—Vehrs points out that the fundamental principles of regional subarachnoid analgesia are that puncture of the arachnoid may be performed at any desired level, and that the dose of the drug (in this case procaine hydrochloride) necessary to produce sensory block must be

known. Since the effective difference between sensory and motor block is from 15 to 25 mg. of French procaine hydrochloride, it is easy to determine the proper dosage. With the use of 1.5 cc. of spinal fluid as a diluent, 50 mg. of procaine hydrochloride is insufficient to produce an analgesia for sufficient time to perform anything but short time operative and diagnostic procedures, 60 mg. is sufficient for dorsal injections and 70 mg. will produce complete sensory block with a little superadded motor nerve block. Fear of piercing the cord is unwarranted, and should it occur, it does no harm if small needles and surgical asepsis are used. No injections should be made over the phrenic nerves, because the first dorsal injection site is safer and gives the same analgesic results. Injection of a sensory dose of procaine hydrochloride into the cisterna magna is safer than injections of the same dose in the cervical region, because of the large lake present for the rapid dilution of the drug. The sensory dose for the cistern is much greater than that at any other segment. There are practically no contraindications to this method. No deaths have occurred with this simple technic. This type of analgesia has a great field of usefulness in the cases that require no motor block, and in the patients who have greatly weakened heart muscles and pulmonary or other complications.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Physical Medicine, London

7: 173-192 (Jan.) 1933

Technic of Wessely Radiation Apparatus in Treatment of Laryngeal Tuberculosis. J. W. Miller.—p. 175.
Relationship of Light-Climatic Research to Public Health. W. Hausmann.—p. 177.
Radium in Medical Diseases. F. H. Humphris.—p. 179.

British Journal of Surgery, Bristol

20: 361-544 (Jan.) 1933

Relationship of Structure of Enlarged Prostate to End-Results of Prostatectomy. E. W. Riches and E. G. Muir.—p. 366.
*Rubber Esophagus. A. Evans.—p. 388.
Occlusion of Main Artery and Main Vein of Limb. W. C. Wilson.—p. 393.
Innervation of Blood Vessels of Upper Extremity: Some Anatomic Considerations. D. Sheehan.—p. 412.
Report on Strangeways Collection of Rheumatoid Joints in Museum of the Royal College of Surgeons. R. L. Knaggs, with photomicrographs by G. H. Rodman.—p. 425.
Preoperative and Postoperative Treatment of Gallbladder Disease. A. F. Hurst.—p. 444.
Reconstructive Esophagoplasty: Notes of Successful Case. H. H. Sampson.—p. 447.
Bipartite Carpal Navicular Bone. G. I. Boyd.—p. 455.
Eight Letters of Joseph (Lord) Lister to William Sharpey. C. R. Rudolf.—p. 459.
*Extensive Loss of Tibial Diaphysis: Tibiofibular Grafting. G. R. Girdlestone and W. B. Foley.—p. 467.
Parathyroid Tumor Associated with Generalized Osteitis Fibrosa: Case. H. Cohen and R. E. Kelly.—p. 472.
*Diagnosis and Treatment of Generalized Osteitis Fibrosa with Hyperparathyroidism. R. C. Elmslie, F. R. Fraser, T. P. Dunhill, R. M. Vick, C. F. Harris and J. A. Dauphinee.—p. 479.
Chronic Parotitis: Report of Four Cases with Sialograms. L. N. Pyrah.—p. 508.
*Technic of Resection of Presacral Nerve (Cotte's Operation). A. A. Davis.—p. 516.

Rubber Esophagus.—Twenty-three years ago, for an extensive carcinoma, Evans removed the larynx, part of the pharynx, the cervical esophagus, and as much of the thoracic esophagus as his fingers could reach behind the sternum. This necessitated a permanent tracheotomy and a permanent gastrostomy. The patient is alive and well today. She takes her food by mouth, masticates and swallows it, and no onlooker would guess there was anything unusual in the process—but an extrathoracic rubber esophagus has replaced the normal one. The original empyema tube has been replaced by a curved rubber tube fitted with a flange. The number 9 Jacques catheter originally introduced into the stomach at the time of the gastrostomy has been at various times replaced by rubber tubes of increasing size and eventually has attained its present size, number 15; this too is fitted with a flange, 5 inches from its lower end, and to this tapes are attached; the tapes are tied round the abdomen to keep the gastric tube in position.

Extensive Loss of Tibial Diaphysis.—Girdlestone and Foley present the case of a boy in whom they performed an operation for bridging a big gap in the tibia after a partial diaphysectomy for osteomyelitis. They used the following technic: Through a long external incision, practically the whole length of the shaft of the fibula was exposed and the periosteum incised and reflected. Tracks were then prepared through the soft parts deep to the anterior tibial muscles, vessels and nerves, beginning from each end of the exposed fibular shaft and continued as tunnels drilled with a narrow gouge into the healthiest and strongest part of the tibial metaphysis, the upper one obliquely upward into the upper metaphysis, and the lower one obliquely downward into the lower metaphysis. The right tibia was then exposed and four grafts were cut as follows: (1) an osteoperiosteal graft about ¾ inch broad and sufficiently long to cover the whole length of the exposed fibula; (2) a graft about ⅜ inch broad, consisting of cortical and medullary bone, of the same length, and (3) two similar but shorter and rather stouter grafts. The two short grafts, after being pointed slightly at one extremity, were pegged firmly into the tunnels previously drilled in the upper and lower tibial metaphyses. The free ends of these grafts, after traversing the oblique tracks in the soft parts, ended in contact with the bared shaft of the fibula under the reflected periosteum. The ends were crushed and turned so as to lie in close apposition to the fibular shaft. The long bone graft was then laid along in contact with the shaft of the fibula under the fibular periosteum, and the osteoperiosteal graft was laid over it with its bony surface in contact with the fibular shaft and the three grafts. Both wounds were sutured, and the grafted leg was put into a plaster cast including the knee and ankle joint. Roentgenograms taken ten months after the operation showed great hypertrophy of the fibular shaft, which is beginning to resemble in thickness the tibia of a child of the patient's age.

Osteitis Fibrosa with Hyperparathyroidism.—Elmslie and his associates report three cases of generalized osteitis fibrosa with hyperparathyroidism, with an account of the bony lesions as determined by exploratory operations and roentgen examinations, and the results of a chemical investigation of the calcium and phosphorus metabolism. In each of the three cases a tumor of the parathyroids was removed by operation. Tetany resulted from the operation in two of the cases. The diagnosis of generalized osteitis fibrosa depends on the demonstration of generalized rarefaction of the bones, in addition to the presence of cystlike areas of rarefaction, cellular tumors of the bones, spontaneous fractures, muscular weakness and wasting, and aches and pains in the limbs. Renal calculi were present in two of the three cases on roentgen examination. An abnormally high level of serum calcium was not always found, even when a parathyroid tumor was present. In the authors' three cases an increased excretion of calcium in the urine was constantly demonstrated. In cases of generalized osteitis fibrosa, the presence of hyperparathyroidism should be demonstrated before operation on the parathyroids is undertaken. After the removal of the parathyroid tumor, the level of the serum calcium fell strikingly and calcium was retained by the body; or, if retention was present previously, this was definitely increased. An abnormal condition of the phosphorus metabolism was found in each of the three cases, but no consistent relation could be demonstrated between the changes in the calcium metabolism and the phosphorus metabolism, either before or after the removal of the parathyroid tumors. As a result of the removal of the parathyroid tumor, striking improvement in general health and strength and cessation of pain resulted in each of the three cases, and no further fractures occurred. A considerable increase in the density of the bones, especially around the cysts and in the cortical bone, was seen from ten to twenty-four months after the operation. In one case the appearance of the skull showed a striking return toward the normal twenty months after the operation.

Resection of Presacral Nerve.—Davis describes an operative technic for the resection of the presacral nerve, which is easy and safe to perform, except in the presence of occasional abnormalities, which he gives as he has observed them in twenty consecutive cases. The technic is as follows: When the peritoneum is opened, the abdominal and pelvic organs are rapidly examined, and any abnormality is dealt with. This done, the Trendelenburg position is adopted, and the site of

operation is exposed by careful packing off of the intestine on all sides. The three points of Cotte should next be definitely identified by palpation: the promontory of the sacrum, the bifurcation of the aorta and the inferior mesenteric artery. The posterior parietal peritoneum over the nerves is gently lifted and snipped with scissors, and the incision is extended upward and downward for an inch or more, exposing the operative field. No attempt should be made to dissect out and excise the individual nerves. Instead, the layer of fibrocellular tissue, in which the nerves run and which lies between the posterior parietal peritoneum anteriorly and the left common iliac vein and the fifth lumbar vertebra posteriorly, should be systematically removed in one sheet, from the left common iliac vein to the right common iliac artery laterally, and from the aortic bifurcation above to the sacral promontory below. A little more than 1 inch of the nerve or nerve plexus is thus excised. It is unnecessary to transgress these limits. The fascia containing the presacral nerves is of a peculiar density and toughness and any doubt of its identity is easily dispelled by exerting firm traction on its proximal cut end. Hemorrhage is usually negligible, coming solely from the tiny vasa nervorum, and is controlled by tampon pressure. The occasionally brisk arterial bleeding from an abnormal vessel is easily seen and clipped. A continuous peritoneal suture of number 90 linen thread completes the intra-abdominal portion of the operation, and the wound is closed in layers.

British Medical Journal, London

1: 173-212 (Feb. 4) 1933

Results of Lumbar Sympathectomy in Thrombo-Angiitis Obliterans. E. D. Telford and J. S. B. Stopford.—p. 173.
Effect of Passage Through Glossina on Resistance of Tryparsamide-Fast Trypanosome. W. Yorke, F. Murgatroyd and F. Hawking.—p. 176.
*Chronic Pulmonary Tuberculosis: New Conception. R. C. Wingfield.—p. 179.
*Pernicious Anemia with Return of Hydrochloric Acid and Ferments After Treatment. L. S. P. Davidson.—p. 182.
Forcible Nasal Inspiration. J. Dundas-Grant.—p. 183.
Multiple-Puncture Cutaneous Tuberculin Test. W. S. Craig.—p. 184.

Chronic Pulmonary Tuberculosis.—Wingfield's conception of chronic pulmonary tuberculosis is based on the seven postulates founded on the accepted research work published during the last twenty years: 1. That after the first infection of the human body, with its resulting "primary focus," be this situated where it may, the first manifestation, or the early lesion, of the adult type of chronic pulmonary tuberculosis is due to a hematogenous deposit of bacilli obtained by the blood stream from the lymphatic system and accompanied by a local allergic tissue reaction. The author calls this a secondary lesion. 2. That the life of this lesion in its pure state is extremely short—a matter of a few days—and that by the end of that time its fate is determined. It either disappears, leaving a negligible scar, or else undergoes certain definite changes and certain unknown changes, becoming what may be termed an intermediate lesion. 3. That the life of the intermediate lesion is indeterminate, depending on the diathetic condition of its host, his health at the time and his environmental conditions. It either remains as an intermediate lesion, spreading by direct extension in all directions, or healing in one direction and spreading in another, or remaining dormant but unhealed, or else it heals decisively. In its healing it may either form a fibrous or a fibrocalcareous scar with no activity or may contain somewhere in its interstices small areas of an intermediate lesion. 4. That the intermediate lesion, healed as far as it may and in a nonprogressive state, is a tertiary lesion. 5. That pure tertiary lesions do not spread. Apparently pure ones, if they do spread, do so slowly, and then only by virtue of the intermediate elements they contain. 6. That tertiary and intermediate lesions may become secondarily infected. 7. That spread of disease takes place in three ways: (*a*) By the appearance of a new, hematogenous, secondary lesion, which will behave in exactly the same way as its predecessor or predecessors. These new secondary lesions may occur time and time again. (*b*) By the spreading of an intermediate lesion by its direct extension of tissue infiltration and destruction. (*c*) By rapid bronchogenic spread, in terminal states, after hemoptysis and under anesthesia. The author concludes that, if one cannot prevent the recurrence of secondary lesions, one must admit almost a 50 per cent failure and therefore one's patients should no longer be labeled tuberculous and nontuberculous—and the tuberculous as active or inactive, advanced or incipient—and be herded into a sanatorium, hoping for the best when one knows that for the majority the worst will occur. The reactionary continuance of such a policy should hold one up to ridicule; it wastes public money and imposes hardships on one's patients to no useful end.

Pernicious Anemia and Hydrochloric Acid.—Davidson describes a case of pernicious anemia in which the stomach regained the power of secreting hydrochloric acid and pepsin and, in all probability, the intrinsic factor of Castle. The patient has maintained excellent health and a satisfactory blood level for the past six months on a normal diet. While it is necessary to await developments for another year, it is not unreasonable to assume that this case of pernicious anemia has been cured. The patient was given two tubes daily of a fish liver extract made in Aberdeen. A reticulocyte crisis started on the third day and reached 18 per cent on the fifth day, returning to normal in twelve days. As soon as the reticulocyte crisis was well developed, fish liver extract therapy was stopped. Apart from the usual hospital diet the patient received nothing further in the way of specific therapy (mammalian liver or liver extract, gastric tissue products, vitamin B preparations), drug treatment (iron or arsenic) or gastric lavage. The remarkable potency of the remedy employed for this short period is evidenced by the doubling of the blood count in twelve days and the trebling of it in twenty-one. Thirty-three days after admission, the patient left the hospital with a blood count of 4,100,000 red cells and 85 per cent hemoglobin. The liver and spleen had diminished in size, and his general health and appearance were excellent.

Journal of Physiology, London

77: 207-318 (Feb. 8) 1933

Components of Retinal Action Potential in Mammals and Their Relation to Discharge in Optic Nerve. R. Granit.—p. 207.
Experiments on Nature of Labile Rôle of Sulphur in Metabolism. H. E. C. Wilson.—p. 240.
Antagonistic Effect of Alcohol on Pituitrin Hyperglycemia. M. M. Murray.—p. 247.
Observations on Sensation: Sensory Functions of Skin for Touch and Pain. D. Waterston.—p. 251.
Single Shock Excitation and Inhibition of Contralateral Extension in Spinal Cat. K. Matthes and T. C. Ruch.—p. 258.
Respiration of Isolated Gill Tissue of Eel. J. B. Bateman and A. Keys.—p. 271.
The Mucus Factor in Automatic Regulation of Acidity of Gastric Contents. C. Bolton and G. W. Goodhart.—p. 287.
Histamine-Histaminase System in Isolated Perfused Kidney-Lung Preparation. R. G. MacGregor and S. Peat.—p. 310.

Journal of State Medicine, London

41: 1-62 (Jan.) 1933

Diagnosis of Occupational Dermatitis. R. M. B. MacKenna.—p. 5.
Rôle of Hospital Almoners in Maintenance of Health and Avoidance of Disease. W. H. M. Telling.—p. 21.
Chemical Changes in Pasteurized Milk. S. Andrews.—p. 42.
Differentiation of Bacillus Coli and Bacillus Lactis-Aerogenes. W. J. Wilson.—p. 45.
The Nurse in Industry. Irene H. Charley.—p. 47.

Japanese Journal of Obstetrics and Gynecology, Kyoto

15: 341-430 (Oct.) 1932

Experimental Investigation of Effect of Nervous System on Function of Genital Organs. K. Minamikawa.—p. 342.
Study on Effects of Bleeding on Pregnancy. T. Kosaka.—p. 364.
Experimental Study on Antitoxic Function of Human Placenta. K. Ueda.—p. 389.
*Criticism of Injection of Pilocarpine as Remedy for Urine Retention After Gynecologic Operation and in Puerperium. Y. Katsu.—p. 398.
Elderly Pluripara. J. Nakagawa.—p. 402.
Instance of Interstitial Tubal Pregnancy Diagnosed and Extirpated Before Rupture. N. Kawashima.—p. 406.
Chorioidal Angioma. N. Kawashima.—p. 412.
Changes in Blood Figure in Normal and Cancerous Albino Rats, with Reference to Effect of Diathermy. T. Fuke.—p. 418.
Etiology of General Congenital Edema of Fetus. H. Yagi and H. Fujimori.—p. 425.

Injection of Pilocarpine in Treatment of Urine Retention.—Katsu treated eleven patients with urine retention occurring after systematic panhysterectomy for cancer, thirty-three cases of urine retention after gynecologic laparotomy, and twenty-four cases of urine retention in the puerperium, using a subcutaneous injection of from 0.5 to 1 cc. of a 1 per cent solution of pilocarpine chloride. When no results were obtained, the same quantity was diluted with about 5 cc. of

physiologic solution of sodium chloride and injected into the median vein; this reduced the height of the bladder to 3 finger-breadths above the symphysis. The author concludes that the treatment can be applied in every type of urine retention. It saves frequent catheterization and prevents infection through the urinary route. When the quantity of natural urination is reduced after systematic panhysterectomy, this treatment increases it markedly. It is generally effective in urine retention of other gynecologic laparotomies and during the puerperium, especially when no other treatments for the retention are effective. The by-effects are slight and temporary.

Presse Médicale, Paris

41: 473-496 (March 25) 1933

Drainage of Purulent Pleurisies in Closed Thorax. H. Costantini.—p. 473.
*Curative and Preventive Treatment of Ankylosis and Posttraumatic Arthritis by Acetylcholine. R. Fischer.—p. 475.
Normal and Pathologic Innervation of Dental Pulp. M. A. Gordon and M. E. Jorg.—p. 479.
Cleaning Lymph Nodes of Neck in Buccopharyngeal Cancers. J.-L. Roux-Berger and A. Tailhefer.—p. 482.
Gout and Rheumatism. M.-P. Weil and G. Détré.—p. 484.
Influence of Allergic Condition in Experimental Tuberculosis. E. Leuret and J. Caussimon.—p. 487.
Treatment of Recurrent Luxation of Shoulder. A. Sicard and J. Hepp.—p. 489.
Intratracheal Injection of Iodized Poppyseed Oil by Transnasal Method. G. Rossel.—p. 490.
Roentgenologic Sign of Congenital Coxofemoral Luxation. F. Gottlieb.—p. 492.

Ankylosis and Posttraumatic Arthritis.—A comparison of the results of sympathectomy with those of endocrine therapy in severe cases of ankylosis with pain and osteoporosis, following articular trauma or prolonged immobilization of a joint, led Fischer to the utilization of acetylcholine. Its chief action is vasodilation of the small peripheral arteries. The success obtained with it in the treatment of varicose ulcers made him think that in certain cases of articular ankylosis it might have a similar action to that of sympathectomy. He first used acetylcholine in old cases of ankylosis in poorly reduced fractures and in cases of painful stiffness following immobilization. The results were so favorable that he tried this treatment as a preventive in recent fractures, by giving injections of acetylcholine during immobilization. From the results of thirteen cases which he reports, he concludes that any articular trauma or any immobilization of a limb which may cause ankylosis of the joint is amenable to treatment with acetylcholine. The treatment should be started during the first days of immobilization and prolonged according to the condition of the joint. If the joint is relatively supple at the end of immobilization, a few injections of acetylcholine will quickly cure the persistent stiffness. If a severe, painful stiffness or ankylosis is feared because of the patient's age, the severity of the lesion or imperfect reduction, or because the ankylosis resists treatment or is of long standing, the injections of acetylcholine should be given daily. The amount needed for a full treatment is from fifteen to twenty ampules of acetylcholine (Roche) in 1:10 dilution; it may be increased during the first days of immobilization if a retardation is feared. The treatments accelerate complete cure. Ankylosis disappears rapidly with this treatment and, in cases of intra-articular fracture or an immobilized joint, the joint retains its mobility when the cast is removed. In contrast with sympathectomy, this treatment does not increase osteoporosis; in some cases it does not affect it and in other cases it decreases it. The author offers the following hypothesis to explain the action of acetylcholine: There is partial vasoconstriction of the secondary arterioles in a traumatized region; acetylcholine relieves the vasoconstriction and has a favorable effect on the calcium metabolism.

Deutsche medizinische Wochenschrift Leipzig

59: 355-396 (March 10) 1933

Therapeutic Incompatibilities. F. Eicholtz.—p. 355.
*Pathogenesis of Chronic Pulmonary Tuberculosis by Exacerbation of Old Pulmonary Primary Complexes. H. H. Kalbfleisch.—p. 357.
Significance of Protein-Peptone Solution for Methodical Examination of Stomach. Van der Reis.—p. 359.
Study on Weil's Disease. A. Bergwall.—p. 361.
Experimental Investigations on Chemotherapeutic Action of New Colloidal Bismuth Preparation. M. Hahn and L. Wámoscher.—p. 362.
Clinical Observations on Action of New Bismuth Preparation. W. Richter.—p. 363.
*Treatment of Erysipelas. W. Vogel.—p. 365.
Spasm of Pelvic Cavity and of Sacral Region and Its Treatment. A. Müller.—p. 365.
Observations on Spinal Cord in So-Called Haff Disease of Cats. H. Assmann, H. Bielenstein, H. Habs and B. zu Jeddeloh.—p. 367.
Retardation of Period of Dilatation in Old Primiparas: Cause and Treatment. E. Fauvet.—p. 368.

Pathogenesis of Chronic Pulmonary Tuberculosis.—According to Kalbfleisch, it is generally accepted that the dissemination of tuberculosis from a primary focus, after it has been at rest for a longer period, is comparatively rare. A relation between an old primary focus and new tuberculous tissue products in the lung can be established as certain only on the basis of the following factors: spatial relations between the two, absence of other foci, absence of new tuberculous changes in the regional lymph nodes of the lung, and absence of tuberculous changes in the organs of the systemic circulation. In all other instances the interrelation between primary complex and chronic pulmonary tuberculosis is only an assumption and in the majority of cases it will be possible to demonstrate that so-called exogenous or endogenous reinfections from the early period of the primary lesion were the point of origin for the exacerbation. The author studied cadavers in order to determine whether exacerbations originating in the old primary focus could be definitely established. He describes two cases in which the occurrence of exacerbations of calcified primary foci could be demonstrated. However, such an occurrence is extremely rare and is not identical with the pathogenesis of a pulmonary phthisis. On the contrary, it was found that the changes of the exacerbated calcified primary focus were limited to its capsule and its immediate surroundings. There may be exceptions, but the author is convinced that they are extremely rare. He stresses the fact that exacerbations of calcified primary pulmonary complexes are possible, that they are extremely rare in the pulmonary portion of the complex and somewhat more frequent in the lymph node portion, but that in both cases they have only a slight tendency to dissemination and that, for this reason, they are only rarely the point of origin of chronic pulmonary phthisis.

Treatment of Erysipelas.—Vogel states that, in addition to the local treatment of grave and average cases of erysipelas, he has employed intramuscular injections of from 20 to 100 cc. (generally 25 cc.) of a polyvalent, antitoxic and anti-infectious streptococcic serum. He found that this serum therapy had a favorable influence on the general manifestations of the disease, particularly the temperature, which decreased rapidly. The local manifestations did not yield so readily or they even spread for a day or two after the serum was administered, but the pain, erythema and tenseness of the skin were lessened, and the whole process appeared to take a more benign course.

Klinische Wochenschrift, Berlin

12: 369-408 (March 11) 1933

Progress in Investigation of Nature and Etiologic Treatment of Toxicoses of Pregnancy. J. Hofbauer.—p. 369.
*Psoriasis as Metabolic Problem. O. Grütz and M. Bürger.—p. 373.
Colloid Osmotic Pressure and Edema Problem. W. M. Bendien and I. Snapper.—p. 379.
Pharmacologic Properties of a New Compound of Group of Unsaturated Amines. H. Mügge.—p. 381.
Experimental and Clinical Contributions to Pharmacology of Iodine. C. Tiedcke.—p. 383.
Use of Brain Extracts for Complement Fixation Reaction in Cerebrospinal Fluid. K. H. Vohwinkel.—p. 386.
Castration Experiments on Male Sticklebacks (Gasterosteus Aculeatus) During Estruation. J. Becker and R. Lehmensick.—p. 387.
Influence of Hormones on Fermentative Processes: Influence of Insulin on Amylase of Blood and Liver. A. Utewski, S. Epstein and W. Osinskaja.—p. 388.
Bromine Content of Blood. F. L. Hahn.—p. 390.
Determination of Normal Bromine Content of Blood. A. Bier and W. Roman.—p. 391.
Idem. H. Fleischhacker and G. Scheiderer.—p. 392.

Psoriasis as Metabolic Problem.—Grütz and Bürger relate studies which indicate that the underlying cause of psoriasis is probably a disturbance of fat metabolism. They consider two possibilities: (1) that the fats, which are a physiologic requirement of the skin, are eliminated through the capillary system in excessively large quantities and, on entering the epidermis, produce the psoriatic manifestations; (2) it is possible that nonphysiologic or irregularly composed lipoids are the cause. In both cases the cutaneous manifestations of psoriasis could be considered as an inflammatory reaction to the pathologic supply of lipoids. Moreover, this theory would

bring psoriasis in relation with the xanthomatoses or the lipoidoses, with which it has in common a similarity in the localization of the lesions and also the fact that it is quite often a hereditary condition. The interpretation of psoriasis as a disturbance of fat metabolism is supported by the success of the dietary treatment deficient in fat content. The authors resorted to this diet in eleven cases of psoriasis. All other therapeutic measures were discontinued when the patients were subjected to this diet. In four cases that had been refractory to other treatments, the fat free diet resulted in the complete disappearance of all symptoms; in five instances considerable improvements were observed, and two patients, who are still being treated, likewise show improvement. The authors present photographic proof of the efficacy of the fat deficient diet in a case of severe psoriasis. Other aspects of psoriasis that can be explained on the basis of disordered fat metabolism are: that butchers and farmers, in whom a diet with excessive fat content is likely, are often subject to psoriasis; that relapses of psoriasis are especially frequent during the cold season when fat consumption is usually greater; that psoriasis is primarily a disease of the colder climates and practically unknown in the tropics, and that carefully observing physicians as well as patients have found that psoriasis shows a better healing tendency when foods such as butter and fats are avoided. Reports in the literature show the efficacy of meat free and vegetarian diets in psoriasis.

Wiener klinische Wochenschrift, Vienna

46: 321-352 (March 17) 1933. Partial Index

*Vermiform Appendix and Appendicitis. B. Sperk.—p. 322.
Electrosurgery in Carcinoma. F. Mandl.—p. 328.
Result of Comparative Clinical and Roentgenologic Investigations in Pneumonia. R. Klima and R. Pape.—p. 331.
*Complement Fixation Reaction in Hypersusceptibility Against Arsphenamine Preparations. G. Ensbruner and J. Wendlberger.—p. 333.
*Birth in Deflexed Positions of Fetal Head: Recognition and Treatment. H. Katz.—p. 338.
True and False Stenocardia. L. Hess.—p. 339.

Vermiform Appendix and Appendicitis. — Sperk calls attention to the structure of the vermiform appendix, which differs from that of other portions of the intestine primarily by its abundance in lymphoid tissues. The former belief that the appendix is entirely useless has been largely abandoned in favor of the theory that it is an organ with a lymphatic function. In this respect, studies have been made on various animal species and the author has continued these studies on the development and distribution of the lymphatic tissues in the intestine of certain carnivorous animals. He thinks that the development of lymphoid tissues in the intestine is dependent on the contact with the intestinal contents and on the duration of the retention of these contents. In discussing the etiology of appendicitis he evaluates the rôle of the bacterial flora and the significance of the diet, particularly as to whether it is mostly vegetarian or has a high protein, especially meat, content. But he also shows that a meat diet cannot be the only pathogenic factor in appendicitis. He concludes from observations on animals that a meat diet requires considerable physical activity because a rapid intestinal passage is necessary to prevent protein putrefaction. He thinks that an oversupply of proteins combined with deficient utilization and a tendency to constipation are the main factors that predispose to appendicitis. In accordance with this he thinks that appendicitis can be prevented by a suitable diet. He does not wish to be taken for an apostle of vegetarianism, but he considers a diet with a high meat content inadvisable for persons with sedentary occupations.

Complement Fixation Reaction.—Ensbruner and Wendlberger decided to try the complement fixation reaction for the detection of hypersusceptibility against arsphenamine (1) because repeated intracutaneous tests may produce sensitization and (2) in order to be able to detect an exciting or developing arsphenamine hypersusceptibility before or in the course of an arsphenamine cure, without exposing the patient to the dangers of sensitization involved in cutaneous tests. They give a brief report of the tests they performed on the serums of three patients with arsphenamine hypersusceptibility and on forty-three control persons. In the persons with hypersusceptibility to arsphenamine a deviation of the complement was evident.

Birth in Deflexed Positions of Fetal Head.—Presentation of the forehead occurs in approximately 1.5 per cent of deliveries. This position can be recognized during internal examination by the tendency of the large fontanel, which is in the lowest plane, to rotate toward the pubic symphysis, whereas the small fontanel can hardly be reached. The delivery in this position taxes the perineum considerably, and for this reason the author recommends prophylactic episiotomy, but he thinks operative delivery unnecessary. If in exceptional cases the forceps have to be employed, the typical birth mechanism should be imitated as much as possible, but an expectant attitude is generally best. Katz further discusses presentation of the face, which occurs in from 0.36 to 0.5 per cent of deliveries. He asserts that if an expectant attitude is taken, 90 per cent of the facial presentations terminate favorably for mother and child. The mortality of children born in this position is only slightly higher than that of children born in occipital presentation and consequently it is advisable to avoid the early and unnecessary use of the forceps. If it becomes necessary to terminate the delivery, Kjelland's forceps should be used. The author considers the brow presentation the most difficult of the deflexed positions. In a slightly narrow pelvis in multiparas, version may be attempted; but, if the pelvis is extremely narrow, delivery by cesarean section is advisable. However, the latest statistics indicate that in this presentation likewise an expectant attitude is best for mother and child.

Zeitschrift f. d. ges. experimentelle Medizin, Berlin

87: 283-550 (March 6) 1933. Partial Index

Action of Inflammatory Influences on Movement, Growth and Metabolism of Isolated Cells and Tissues: Analysis of Cellular Reaction in Inflammation. R. Meier.—p. 283.
Action of Smallest Quantities of Thorium X and of Benzene on White Blood Picture. G. Wallbach.—p. 340.
Utilization of Galactose in Physiologic and Pathologic Conditions. H. Kosterlitz and H. W. Wedler.—p. 397.
Significance of Phenol-Indole Metabolism. M. Biebl.—p. 416.
Course of Oxidative and Glycolytic Processes in Leukocytes of Inflamed Tissue During Phagocytosis. A. D. Ado.—p. 473.
Studies on Leukocytosis. G. Gottsegen and E. Winkler.—p. 481.
Influence of Hemostatic Remedies on Thrombocytes. G. Rheindorf and Emma Walter.—p. 496.
*Tolerance Tests of Stomach: Examination of Gastric Juice by Means of Protein-Peptone Solution. Heckmann.—p. 506.
Experimental Investigations on Synergism of Vitamins. H. J. Jusatz.—p. 529.
Pathogenesis of Acute Pulmonary Edema. E. Coelho and J. Rocheta.—p. 545.

Examination of Gastric Juice.—Heckmann describes a test that employs a protein-peptone solution and utilizes the tolerance principle in the examination of the stomach. The solution is prepared by mixing 80 cc. of a freshly prepared solution of egg albumin with 130 cc. of distilled water, 4 Gm. of Witte's peptone being added and this solution being stained with two drops of a 2 per cent solution of methylene blue. Thus the solution contains approximately 40 per cent of egg albumin and 2 per cent of Witte's peptone. Before being introduced into the stomach it is heated to body temperature and filtered through gauze. Of the total of 210 cc. of solution, 10 cc. is kept and, together with tenth-normal hydrochloric acid and tenth-normal sodium hydroxide, is used for titration of the portions withdrawn from the stomach to determine the acid and alkali binding power. The remaining 200 cc. of the solution is introduced into the stomach by means of a thin catheter, following withdrawal of the contents of the fasting stomach. The first fraction of 10 cc. of the gastric contents is withdrawn five minutes after the introduction of the protein-peptone solution, the next fraction five minutes later, and each following fraction after ten minute intervals until discoloration sets in. Later the entire remaining quantity of the secretion is withdrawn. Titration reveals how much hydrochloric acid has been secreted. The normal curves obtained with the protein-peptone solution do not differ from those obtained when caffeine is used, but the protein-peptone test is of great value in all stages of subacidity. Whereas other methods show similar curves, whether the secretion of hydrochloric acid is almost completely abolished or only slightly impaired, the protein-peptone solution permits the differentiation of the following types: (1) secretion of hydrochloric acid insufficient for neutralization of the protein-peptone solution; (2) secretion of hydrochloric acid adequate for neutralization of the protein-peptone solution but not for establishing the peptone optimum;

(3) secretion of hydrochloric acid sufficient for neutralization of the protein-peptone solution and for optimal reaction of pepsin digestion. In hyperacidity the protein-peptone test generally reveals a higher degree of acidity and it frequently detects hyperacidity where other test methods fail. In chronic stenosing ulcers with accompanying gastritis, the hyperacidity usually indicated by the caffeine test does not become evident in the protein-peptone test, but an insufficiency of the hydrochloric acid secretion is often detected. The new method is not meant to replace the caffeine test but is intended to supplement it.

Zeitschrift für klinische Medizin, Berlin

123: 587-827 (March 10) 1933. Partial Index

*Functional Mitral Stenoses Caused by Tumors of Left Auricle. H. Ludwig.—p. 587.
Aneurysm of Pulmonary Artery. A. Käppeli.—p. 603.
*Influence of Excess Fat Diet on Red Blood Picture: Dietary Therapy of Polycythemia. H. Rothmann, J. Stern and P. Hoene.—p. 620.
*Incidence of Increased Arterial Pressure in Young Persons. H. Weinrich.—p. 629.
*Takata-Ara Reaction (Jezler Modification) in Diseases of Liver. C. Rohrer.—p. 637.
Pathology and Clinical Aspects of Hemorrhagic Tendency. R. Jürgens.—p. 649.
Muscular Hyperplasia of Cardiac Ventricles, Position of Heart and Electrocardiogram. H. Klink.—p. 687.
*Action of Baths on Circulation. H. Winterstein and Lily Fraenkel-Tessmann.—p. 700.
Arsenic Hydride Poisoning with Especial Consideration of Changes in Blood. F. Fretwurst, S. Horwitz and R. Rosenbaum.—p. 703.
Ammonia Content of Blood Following Muscular Exertion. H. Kalk and A. Bonis.—p. 731.
Relation of Cheyne-Stokes Respiration to Cardiac Insufficiency. E. Ronald and S. Wassermann.—p. 742.
Disturbance of Cholesterol Elimination: Aspects of Hypercholesterolemia. R. Schönheimer.—p. 749.
Hyperketonemia in Hyperventilation and Other Alkalotic Conditions. K. Paschkis and G. Buttu.—p. 764.
Investigations on First Phase of Blood Coagulation. K. Paschkis and A. Schwoner.—p. 784.
Do Extracts of Intestinal Mucous Membrane Influence Blood Sugar Content? J. Monguió.—p. 793.
Traumatic Genesis of Internal Diseases. M. Schur.—p. 800.
*Thyrotoxic Arrhythmias of Heart and Their Treatment. G. W. Parade.—p. 810.

Functional Mitral Stenoses Caused by Tumors of Left Auricle.—Ludwig points out that most physicians consider diastolic murmurs always indicative of an organic cardiac lesion; that is, they identify it with a change in the valvular apparatus. This is largely justifiable, since exceptions are comparatively rare, and it surprised him when the postmortem examination of a patient, who for six months had had a systolic and a diastolic murmur at the apex of the heart, revealed normal mitral valves and a small myxomatous tumor of the left auricle. This tumor had produced a functional mitral stenosis. The author reviews twenty cases from the literature, in which mitral stenosis resulted from tumor of the left auricle. He calls attention to the frequency of the concurrence of myocarditis with pseudomyxomas of the left auricle and he thinks that a local involvement of the endocardium of the left auricle in the myocarditic process may lead to thrombosis. It is possible that the conditions of mechanical pressure in the left auricle are responsible for the organization and the myxomatous transformation of the thrombus. In discussing the symptomatology of the tumors of the left auricle he points out that there is not a single reliable symptom for these tumors. The symptoms that have been described are caused partly by the accompanying myocarditis (weakness of the cardiac muscle, subfebrile temperatures, deficient response to digitalis), partly by the thrombosis in the heart (embolic infarcts) and partly by the impairment of the mitral valve produced by the tumor.

Influence of High Fat Content of Diet on Blood in Polycythemia.—Rothmann and his associates found that, when from 100 to 200 Gm. of fat was added to the diet for several days, the number of erythrocytes showed a considerable decrease. They decided to utilize this action of an excess fat diet in the treatment of polycythemia. They mention one case in which it was possible to decrease the number of erythrocytes from eight million to less than five million and the hemoglobin content from 155 per cent to 122 per cent. This case reacted most favorably, yet there were several other cases in which a decrease of the erythrocytes could be effected by alternating between a fat deficient diet and a diet with high fat content, but to reduce the hemoglobin it was usually necessary to resort to venesection. The authors cite reports from the literature that indicate the hemolytic action of fatty acids and cite their own observation on a dog, in which the injection of 5 and 10 per cent neutralized caproic acid resulted in a considerable decrease of the erythrocytes. They pointed out that the erythrocyte reducing action of fat should be given consideration in conditions other than polycythemia. They suggest that in the period of convalescence, in the treatment of tuberculosis and in renal and hepatic diseases the fat intake should be restricted to the minimum requirements. They consider the high fat content of the diet of tuberculous patients unfounded, although they realize the significance of fat as a carrier of vitamins.

Increased Arterial Pressure in Young Persons.—Weinrich investigated whether blood pressure increases are present in young persons. His studies were made at an advisory station for athletes on 2,200 young men, aged between 13 and 39, the majority being between 17 and 27. Only those who were entirely healthy were considered for the blood pressure studies. The results of the tests are shown in tabular reports. For the purpose of better classification, the author divides the examined men into three groups: those whose blood pressure is less than 100 mm. of mercury, those in whom the pressure is between 100 and 130 mm., and those with a pressure of more than 130 mm. In the greatest majority the pressure was between 100 and 130 mm. and only in the younger boys was this middle group somewhat smaller. Beginning with the age of 17, this middle group comprised approximately 80 per cent of the examined youths. The group of those aged between 28 and 33 was an exception to this, in that the middle group amounted to 93 per cent. The percentage of youths with a pressure of less than 100 mm. decreased steadily with advancing age. In the young men between the age of 19 and 27 the incidence of this pressure amounted to about 4 per cent, whereas in those aged more than 28 it was extremely rare. A pressure of more than 130 mm. was never observed in boys under 14 and only in eight of those aged 15. From here on the incidence of the higher pressures increased to reach about 15 per cent in those aged 19, and to remain approximately at this percentage up to the age of 28, but in the men between 28 and 33 there was a decided drop in this group, the incidence of pressures of more than 130 mm. being only 6 per cent. The average in the group of higher pressures was 140 mm., but there were also some with 160 mm. and even with 175 mm. The author points out that pressures of more than 150 mm. are generally considered abnormal, particularly in young persons, but, because he found these youths to be entirely healthy, he is ready to doubt this. He thinks that the normal variations of blood pressure may reach into higher values than is generally believed. However, he admits the possibility of another interpretation. He thinks that these youths with the high pressures may later develop true arterial hypertension and considers the absence of symptoms no proof against this, since it is known that arterial hypertension may exist for a number of years without causing trouble. He considers it advisable to examine these youths with high pressures from time to time, and to watch whether in later years they develop symptoms of hypertension.

Takata-Ara Reaction (Jezler Modification) in Diseases of Liver.—Rohrer points out that the exact diagnosis of the disturbances in which enlargement of the liver, ascites and icterus exist is still difficult. However, he considers Jezler's modification of the Takata-Ara reaction, which was described in the *Schweizerische medizinische Wochenschrift* **60:**52 (Jan. 18) 1930 and abstracted in THE JOURNAL, March 29, 1930, page 1024, a valuable aid. He employed it in tests on 125 serums from 108 patients. The results of the tests, the positive outcome of which is based on a shifting of the ratio of albumins to globulins in favor of the coarsely dispersed phase, are compared with the sedimentation speed of the erythrocytes. The author made the following observations: Of eighteen patients with a positive seroreaction, fifteen had cirrhosis of the liver, one had chronic ethylism without clinically demonstrable disorders of the liver, one had carcinoma of the descending biliary passages, but simultaneously existing cirrhotic processes of the liver could not be excluded, and one had diabetes mellitus with fatty degeneration of the parenchyma but

without cirrhotic changes of the liver. Among eighteen patients with a weak positive seroreaction, there were seven with cirrhotic changes of the liver, two with chronic ethylism and without signs of a hepatic disturbance, and nine with hepatic disorders but without signs of a cirrhotic process. Of the seventy-two seronegative cases, twenty-three presented cirrhotic processes of the liver and ten presented chronic ethylism. In patients with ascites, a positive reaction was observed only when a cirrhotic process existed in the liver. The reaction was positive in other puncture fluids (1) when the patient also had cirrhosis of the liver (puncture of the knee joint) and (2) in two pleural punctures in patients with exudative pleurisy of tuberculous etiology but without any signs of hepatic disorder. The author concludes that as an indicator of a disturbed albumin-globulin ratio the Takata-Ara reaction is superior to the erythrocyte sedimentation speed. He also thinks that in the serum and in the ascites fluid it is a great help in the differentiation of cirrhotic from other hepatic processes. Flocculation in four or five different concentrations usually favors cirrhosis of the liver but a negative reaction does not exclude cirrhosis. In the evaluation of a positive reaction in exudative pleurisy of tuberculous etiology, precaution is necessary.

Action of Baths on Circulation. — Winterstein and Fraenkel-Tessmann call attention to studies conducted by Bornstein and his associates, in which the influence of baths on the minute volume of the heart of healthy persons was determined. Bornstein employed the method described by Grollman but, instead of using acetylene, employed nitrous oxide and made the surprising discovery that warm baths of from 32 to 33 C. (89.6 to 91.4 F.), and still more those of from 38 to 39 C. (100.4 to 102.2 F.), increased the minute volume to twice or three times the original value, whereas cold baths effected a slight decrease in the minute volume. The beat volume changed in the same manner, although not quite as severely, whereas the amplitude of the blood pressure was not noticeably changed. Bornstein tried to explain this contradiction by the hydrostatic conditions of the bath. Since Grollman's acetylene method appears to be the best for the determination of the minute volume, the authors decided to repeat the experiments of Bornstein and make the tests with acetylene instead of nitrous oxide. They found that in healthy persons warm baths either cause no change or cause a slight decrease in the minute volume of the heart.

Thyrotoxic Arrhythmias.—Parade shows that, in addition to the well known tachycardia originating in the sino-auricular node, patients with exophthalmic goiter frequently show disturbances of the cardiac rhythm which are a result of the pathologically increased action of the thyroid gland. The author's report is based on observations made on 188 patients with exophthalmic goiter. He observed two types of disturbances in the cardiac rhythm, extrasystole and auricular fibrillation with absolute arrhythmia of the ventricles. The extrasystoles, which may be either ventricular or auricular, are comparatively rare. The author observed five cases of ventricular and three of auricular extrasystole. The most frequent disturbance in the cardiac rhythm of patients with exophthalmic goiter, namely, auricular fibrillation with absolute arrhythmia, may be temporary or may become permanent. The author noted that the temporary fibrillation generally concurred with an exacerbation of the other symptoms of exophthalmic goiter: the excitation was more pronounced, the exophthalmos became exacerbated and the sweating was more profuse. This seems to indicate that the paroxysmal fibrillation is due to an acute increase in the toxic products of the thyroid. On the other hand, it is possible that the excitability of the sympathetic nervous system suddenly increases (as the result of joy, fright or overexertion), rendering the toxic action of the thyroidal secretion more effective. It is probable that the two factors run parallel. If the exophthalmic goiter does not improve, the accesses of auricular fibrillation may become a permanent condition with absolute arrhythmia of the ventricles. The author found that older patients with exophthalmic goiter are especially subject to absolute arrhythmia. The most important factor in the treatment of thyrotoxic arrhythmias is to prevent intoxication of the organism by the secretion of the thyroid. After this has been accomplished, the cardiac disturbances disappear or remedies such as quinidine can exert their action, which is impossible as long as the thyroidal intoxication persists. He advises resorting to iodine treatment only in the hospital where constant control is possible and, as a rule, only when resection of the thyroid can be done as soon as the height of iodine action has been reached. The disturbances of the rhythm developing after the operation are, as a rule, readily counteracted by quinidine. The author states that roentgenotherapy can be tried in most cases of exophthalmic goiter, but, if after three months there is no improvement, surgical treatment should be instituted. Early operation usually gives the best prospects for a complete cure.

Zentralblatt für Chirurgie, Leipzig

60: 609-672 (March 18) 1933

Double Kidneys. K. Volkmann.—p. 610.
Abscess of Abdominal Wall as First Symptom of Bowel Carcinoma. A. Lerch.—p. 616.
Inflammatory Swellings Resembling Malignant Tumors. P. Esau.—p. 620.
Question of Reduction of Compression Fracture of Vertebra. M. Kaspar.—p. 623.
Technic of Reduction of Fractured Vertebra in Attitude of Vertical Lordosis After Watson-Jones. H. Kotrnetz.—p. 625.
*Results with Combined Method of Rib Resection and Closed Drainage in Empyema of Children. F. Klages.—p. 627.
Treatment of Shock by Intravenous Injection of Hypertonic Solutions. F. Schück.—p. 634.

Empyema of Children.—Klages reports on ninety-eight patients treated since 1926 in the surgical clinic of Voelcker. Of these, thirty were nursing infants and very young children. The mortality rate was 7 per cent. The author is impressed with the advantages of a combined method of rib resection and closed drainage. The patients were treated by aspiration until the pus became too thick to flow and were then operated on. The method consisted of a typical rib resection, always under local anesthesia, the making of a small incision into the pleura, and the introduction of a long rubber tube. A finger cot was tied to the end of the tube and, after from twelve to fourteen days, open drainage was resorted to by cutting off the end of the tube. In order to avoid residual cavities, the average duration of drainage did not exceed twenty-nine days. They did not irrigate. Deformities of the spine were prevented by proper orthopedic exercises. The average duration of treatment with the method described was forty-six days.

60: 721-784 (March 31) 1933

Sacralization of Fifth Lumbar Vertebra. P. Graf.—p. 721.
Sacralization of Fifth Lumbar Vertebra as Cause of Backache. A. Beck.—p. 728.
Congenital Lymphangioma of Breast. R. Bonn.—p. 731.
*Operative Treatment of Gastroptosis. B. O. Pribram.—p. 734.
New Hans Lamberger Light Metal Splint for Upper Arm. W. König. —p. 743.
Treatment of Compensatory Veins and of Phlebitic Ulcer. E. Haim. —p. 745.
Plastic Operations on Face and Breasts. H. F. O. Haberland.—p. 746.

Operative Treatment of Gastroptosis. — According to Pribram, operations for ptosis and especially for gastroptosis have fallen undeservedly into bad repute. Perhaps it is not sufficiently appreciated that our organs are suspended by an arrangement so complicated and so skilful as to rob them of their weight. One of the basic causes of ptosis is to be seen in the disturbance of the coordination in this suspension mechanism, resulting in displacement of organs by the force of gravity. The patient becomes conscious of the weight of the organ, so that every change in posture brings about painful sensations, which may range from a sense of mild pressure to severe pain. This pathologic awareness of the weight of an organ constitutes the essence of ptosis as a clinical entity. Emaciation characteristically accompanies gastroptosis. Discomfort and nausea after eating lead to limitation of food intake and further favor loss of fat and progression of the general enteroptosis. The author believes that patients with a clear-cut case of gastroptosis can be benefited by the operation of gastroplication. He considers gastro-enterostomy worse than valueless in this condition, and the various forms of stomach resection too formidable. In his method, three or four rows of plicating silk sutures are introduced into the anterior wall of the vertical portion of the stomach. The horizontal portion, consisting of the antrum and the pylorus and concerned with the emptying act, is not disturbed. The sutures are brought out and are tied in the intercostal spaces. Of the twenty-four patients

operated on by the author, thirteen were followed up for from three to eleven years. Eight of these were found to be in excellent condition and symptom free, and five were improved and symptom free.

Zentralblatt für Gynäkologie, Leipzig

57: 545-608 (March 11) 1933

Hysterotonograph, New Apparatus with Device for Automatic Registration for Clinical Control of Uterine Contractions. E. Frey.—p. 545.
New Apparatus for Recording Uterine Contractions (Tocograph). S. Löwi.—p. 554.
Lipoids in Human Placenta. K. Klaus.—p. 558.
*Calcium Therapy of Acute Inflammations of Adnexa. A von Fekete. —p. 561.
*Simultaneous Application of Parathyroid Hormone and of Calcium in Abnormal Uterine Hemorrhages. G. Bakács.—p. 568.
Treatment of Lochial Stasis. A. Frank.—p. 573.
Douglas's Abscess in Gravidity. K. Grunsfeld and H. Döring.—p. 575.
Bacillus Pneumoniae Friedländer As Cause of Peritonitis of Genital Origin. H.-E. Scheyer.—p. 578.
*Ultraviolet Irradiation of Circulating Blood in Septic Diseases. V. Frommer.—p. 583.
Autohemotherapy in Erysipelas. L. Lajos.—p. 586.

Calcium Therapy of Acute Inflammations of Adnexa.—Von Fekete points out that ten years ago he began to treat acute inflammations of the adnexa with injections of calcium. He mentions the following factors as involved in the action of calcium: the specific action producing a greater impermeability of the vascular endothelium, the pain-allaying action, the reduction of the susceptibility of the cells to inflammatory irritants and the eventual increase in the acid values of the blood. He reviews a number of favorable reports in the literature since his article appeared and relates his experiences with ninety-one patients whom he treated with calcium injections from 1924 to 1931. He resorted to calcium treatment in patients with acute adnexal inflammations of not more than from two to four weeks' standing. Older processes were treated with calcium, when they showed signs of exacerbation or of spreading of the process, in order to overcome or reduce the symptoms of the acute process: exudation, pain and irregular hemorrhages. The calcium was administered by intravenous and by intramuscular injections. He never observed injurious effects from the injections but found that the pain disappeared within a few days. He considers the rapid checking of the inflammatory exudation the most essential action of calcium. He discusses the surgical treatment of the adnexa and shows the value of the calcium in the preoperative and in the postoperative period.

Parathyroid Hormone and Calcium in Uterine Hemorrhages.—Bakács resorted to the simultaneous application of parathyroid extract and of a calcium preparation in fifty-three cases of abnormal uterine hemorrhages. In the majority of patients the hemorrhage was of hypermenorrheal nature. The injections were made into the gluteal muscle. Good results were obtained in metropathia haemorrhagica and particularly in hypermenorrhea. In the latter condition the simultaneous use of the two substances gave better results than hormonal therapy alone, but mild hypercalcemic symptoms developed occasionally. The method proved of symptomatic value, and the effects were lasting in many instances. The author thinks that this is the result of functional changes in the parathyroids or in the entire incretory system.

Ultraviolet Irradiation of Circulating Blood in Septic Diseases.—Since the penetrative power of ultraviolet rays through the layers of the skin is too slight to have an effect on the bacilli circulating in the blood, Frommer exposed a large vein (the vena basilica or the vena jugularis) for a length of from 15 to 18 cm., and removed the adventitia. Following the intravenous injection of 2.5 cc. of a 1 per cent solution of eosin, ultraviolet radiation was applied to the exposed vein for from six to seventy minutes. The author employed this treatment in six cases of severe sepsis. Three of the patients recovered. The first of these patients, who received two irradiations of six and twelve minutes, respectively, had a generalized sepsis with hemolytic streptococci, which developed following an operative intervention for purulent otitis media; the second had a staphylococcic sepsis that developed following manual removal of the placenta; and the third had sepsis resulting from abortion in the third month of pregnancy. The latter two received two irradiations each of thirty and thirty-five minutes, respectively. Of the three patients who died, two were puerperal women who had pyemia and septicopyemia and purulent, pulmonary metastases; the third woman had endocarditis lenta. Whereas, in the three women who recovered, the skin around the wound soon developed an erythema, the three who died showed no erythema, in spite of the fact that they were exposed to the rays for longer periods. The author thinks that this sign may eventually prove to be of prognostic significance. He realizes that the limited number of cases observed by him does not permit a final evaluation of the treatment, but he thinks that it has a regenerative effect and increases the resistance, and that, because it is without danger, the method should be tried in cases of sepsis coming for treatment during the early stage.

Jurnal Po Rannemu Detskomu Vozrastu, Moscow

12: 317-368 (No. 8) 1932. Partial Index

Organization of Campaign Against Measles in Early Childhood. E. K. Mueserova, T. G. Oganesiyan, S. B. Sagredo, A. M. Fedorova and F. M. Aysenshtadt.—p. 317.
*Prophylaxis of Measles by Means of Serum of Adults and of Placental Serum. S. O. Dulitskiy.—p. 322.
Prevention of Measles. N. A. Vakar.—p. 330.
*Specific Therapy in Epidemic Cerebrospinal Meningitis of Children. E. A. Neits.—p. 348.
Epidemic Meningitis Simultaneous with Measles. I. Ya. Shtaerman. —p. 355.

Serum in Treatment of Measles.—Dulitskiy points out that popularization of the "crèche" idea brought about a more urgent need of safeguarding against contagions. The most important of these is measles, owing to the high mortality of the disease in the first year of life. Because of difficulty in obtaining convalescent serum for immunizing purposes, Degkwitz suggested the use of adult blood serum on the assumption that approximately 90 per cent of all adults had had measles. The author suggested in 1924 the use of placental blood obtained a few minutes after the delivery. The dose adopted, 20 cc., was not sufficient to prevent the disease, but resulted in a mild course and insignificant mortality. It was of advantage to institutions to have the children pass through a mild course and acquire an active immunity instead of a temporary passive immunity conferred by the use of a sufficient amount of adult blood serum or placental blood serum. Parents bringing a child to the crèche are obliged to give blood for the preparation of the serum. The influence of immunization on the mortality was strikingly demonstrated by a reduction of the mortality in children under 1 year of age from 39.6 per cent to 4.6 per cent, and in children from 1 to 3 years of age from 19.8 per cent to 2.8 per cent. No difference was noted in the effect of adult blood serum or placental blood serum. Reactions were observed very infrequently and amount to no more than a rise in temperature. The serum loses its potency after thirty days.

Epidemic Cerebrospinal Meningitis.—Neits states that the incidence of epidemic cerebrospinal meningitis, a relatively rare disease twenty-five years ago, has been on the increase in the central states of the Soviet. The statistics of the pediatric clinic of the Voronezh Medical Institute show that there were 127 cases in 1927, 583 in 1930, and twice that number in 1931. The disease affects children almost exclusively, and, because of high mortality and severe complications, becomes an important factor in the morbidity of childhood. Analysis of the cases did not reveal any special predisposing etiologic factors, except that of age. Experience in this respect coincided with that of the rest of the authors in that the youngest children were far more likely to be stricken. In the statistics, the incidence up to the end of the first year amounted to 49 per cent, from 1 to 2 years to 16.5 per cent, from 2 to 4 years to 19.5 per cent, from 4 to 6 years to 7 per cent, and after that the incidence sharply declined to about 0.7 per cent. The greatest number occurred regularly during the early spring and the late autumn months, coinciding with the highest incidence of infections of the upper respiratory tract. To study the effect of specific treatment the author selected a group of 126 patients, who received no treatment of any kind until their admissioon to the clinic, and in whom the clinical diagnosis was verified by bacteriologic examinations. In a group of twenty patients treated without serum or vaccine, there were eighteen deaths. In thirteen severe cases in which vaccine alone was used, there was a mortality rate

of 50 per cent. In seventeen severe cases in which serum alone was used, the mortality amounted to 70 per cent. In forty-five severe cases in which both serum and vaccine were employed, the mortality rate was 25 per cent. The author concludes that the best results were obtained by combining the serum and autovaccine therapy. In one treatment, 10 cc. of antimeningococcus serum was given by the endolumbar route and at the same time an equal amount was administered intramuscularly. An autovaccine, prepared from the fluid obtained at the first spinal puncture, was standardized to contain 5,000,000 killed microbes per cubic centimeter. The initial dose was 0.1 or 0.2 cc. and was increased up to 0.5 or 0.6 cc. Injections were made on alternate days. In case of a dry puncture, the author resorted to the suboccipital route, but he did not notice any advantage over the spinal method. There has not been one instance of serious shock or death from the injections. Serum reaction was noted in 32 per cent. The serum and autovaccine treatment was effective in materially diminishing the mortality. The average duration of the disease was reduced to three weeks when both vaccine and serum were used, and to six weeks when vaccine alone was used. The specific treatment was most effective when applied within the first ten days but had no effect after the fourteenth day. The grave complications of blindness, deafness or chronic hydrocephalus were observed in a single instance when patients were treated with specific therapy.

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Specific Serum in Diphtheria.—Yarotskiy takes a stand against the single large dose of antitoxin in the treatment of diphtheria. He believes that the size of the individual dose as well as the number of injections is to be determined by the patient's condition. He administers 10,000 units to begin with and, in severe cases, repeats the dose the same day. The essential feature of his treatment consists in daily intramuscular injections of antitoxin until all signs and symptoms have disappeared. Injections are kept up until the patient presents the appearance of normal health. Edema of the uvula, hyperemia of the throat, excoriations of the epithelium and swollen tonsils demand further injections. Anemic or apathetic appearance suggests persistence of intoxication and calls for further injections. The author considers it fallacious to treat cardiac involvement by stimulants alone. When examination reveals beginning dilatation of the heart chambers, murmurs, muffled sounds, accentuation of the second pulmonic sound, tachycardia or bradycardia, an additional dose of antitoxin will avert collapse and a fatal outcome. The author recommends an additional dose for severe cases from four to five days after the disappearance of all signs and symptoms. The daily dose in laryngeal diphtheria was 10,000 units. The author had 9 fatalities in 377 cases, a mortality rate of 2.4 per cent. In seven of these his method was not adhered to. When these are excluded, the mortality in the group is 0.5 per cent. The author sees in deviation from his method the main cause of mortality in diphtheria.

Hormonal Sterilization of Female Organism.—Mandelshtamm and Chaykovskiy proved in a previous study that injections of prolan B in animals cause a temporary sterility. The resulting formation of corpora lutea arrests follicular growth, creating a state of pseudopregnancy. The authors made observations in ten women with normal menstrual cycle about to be operated on for some such condition as uterine fibromyoma, cancer of the cervix or cyst of one ovary. Freshly prepared prolan was administered in doses of from 100 to 200 mouse units until, in the course of a few days, the patients received from 400 to 1,100 mouse units. They were operated on from two to twenty-six days after the last injection. Serial histologic sections of ovarian tissue removed at operation demonstrated in each case defective ova in the maturing and matured follicles, disintegration and disappearance of the membrana granulosa, cystic dilatation of the follicles, development of numerous corpora lutea, and hyperemia and hemorrhages into the follicular tissue. The degenerative changes produced render the follicles insusceptible of being fertilized. The authors conclude that (1) various doses of prolan are well borne by women; (2) administration in the course of a few days of from 400 to 1,100 mouse units of prolan results in profound degenerative changes in the follicular apparatus; (3) the histologic changes produced suggest that the foregoing doses are sufficient to cause sterility. They question the harmlessness of temporary hormonal sterilization for the general health of the organism as well as for future generations. The absence of degenerative changes in the ovaries of pregnant women is to be explained by the protecting antagonistic action of other hormones present.

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*Aneurysms at Base of Brain (with Possible Fatal Hemorrhage): Can They Be Due to Traumas? F. Harbitz.—p. 241.
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*Complement Binding with Gonococci in Gonorrhea and Gonorrheal Complications. T. Thjøtta and E. Waaler.—p. 286.
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*Tuberculous Primary Infection and Tuberculous Disease. H. J. Ustvedt.—p. 307.

Aneurysms at Base of Brain.—Harbitz states that aneurysms at the base of the brain are not rare and frequently cause subarachnoidal and intermeningeal hemorrhages, often fatal. In the last twenty years he has seen eighteen such cases, mostly ascribed to arteriosclerosis. Symptoms are often present for days or weeks before sudden rupture and death. Aneurysms at the base of the brain may also be the result of trauma. Congenital anomalies may play a part. Acute alcoholic intoxication is a disposing factor. In younger persons, arteriosclerosis can usually be disregarded. From the literature the author cites cases of aneurysms of the brain assumed to be of traumatic origin, but he finds fairly certain cases lacking. In his personal case of a man aged 31 who had been perfectly well until he sustained a considerable trauma of the head in April 1927, symptoms of brain disturbance set in immediately after the accident and continued till January 1932, when death occurred. In his opinion, the history of the case and the necropsy results connect the aneurysm with the trauma. The possibility of a slight latent aneurysm at the time of injury cannot be excluded, but in such cases the trauma of the head must have been an essential cause for the development of the aneurysm.

Gonorrheal Complications.—Thjøtta and Waaler used the complement fixation test in 130 serums, 95 from cases of gonorrhea with and without complications and the remaining 35 from different disorders of the urogenital tract or arthritis. The reaction was positive in 81 per cent of all certain gonorrhea cases, and in 96 per cent if the pure acute anterior gonorrhea cases are included, in which only four of nineteen tests were positive. The dried gonococcus antigen used in the tests showed no increase in spontaneous inhibition of hemolysis or change in fixation power after the lapse of one year. A simple technic with the use of human complement, such as the Noguchi Wassermann technic, excelled the ordinary technic in borderline cases. The authors consider the reaction of undoubted value for the clinician in deciding the etiology of obscure disturbances of the urinary tract, but useful for the determination of the time of recovery from a gonorrheal disease only with the most critical application.

Tuberculous Primary Infection and Tuberculous Disease.—Ustvedt's investigations indicate that the first tuberculous manifestation during school age as well as in infancy and during earlier adult age follows fairly closely after the primary infection.